| Isog Label | Simplified Weierstrass equation | Field system | $\Delta_{\mathbf{min}}$ | $N$ | Rank | $J(\mathbb{Q})_{\mathbf{tors}}$ | $\#C(\mathbb{Q})$ | $\mathbf{Aut}(C)$ | $\mathbf{Aut}(C_{\overline{\mathbb{Q}}})$ | $\mathbf{End}(J)\otimes\mathbb{Q}$ | $\mathbf{ST}(J)$ | $\lvert Ш_{\mathbf{an}}\rvert$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | lmfdb $(x-1)(x+1)(x^2-2x-1)(x^2+1)$* | $[\mathbb{Q},\mathbb{Q},K_1,K_3]$ | $-2^9$ | $2^8$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/10$ | 6 | $C_4$ | $D_4$ | $K_1$ | $E_4$ | 1 |
| | $-(x-1)(x+1)(x^2+1)(239x^2+2x-239)$* | $[\mathbb{Q},\mathbb{Q},K_1,K_3]$ | $-2^9 13^{12}$ | $2^8$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_4$ | $D_4$ | $K_1$ | $E_4$ | □ |
| 2 | $-(2x-1)(x^2-2x+3)(x^2+2)$ | $[\mathbb{Q},\mathbb{Q},K_2,K_2]$ | $2^{16}3^{12}$ | $2^{10}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2^2$ | $D_4$ | $\mathrm{M}_2(\mathbb{Q})$ | $C_{2,1}$ | 1 |
| | $-3(x^2-2)(x^2+1)(2x^2-1)$ | $[K_1,K_3,K_3]$ | $-2^{16}3^{22}$ | $2^{10}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $D_4$ | $D_4$ | $\mathrm{M}_2(\mathbb{Q})$ | $C_{2,1}$ | $3^2$ |
| | $3(x^2-2)(x^2+1)(2x^2-1)$ | $[K_1,K_3,K_3]$ | $-2^{16}3^{22}$ | $2^{10}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/4$ | 0 | $D_4$ | $D_4$ | $\mathrm{M}_2(\mathbb{Q})$ | $C_{2,1}$ | $3^2$ (*) |
| | $-2x(x^4-14x^2+81)$ | $[\mathbb{Q},\mathbb{Q},L_1]$ | $2^{36}3^{12}$ | $2^{10}$ | 0 | $\mathbb{Z}/4$ | 2 | $C_2^2$ | $D_4$ | $\mathrm{M}_2(\mathbb{Q})$ | $C_{2,1}$ | 1 |
| 3 | $x(x+4)(2x-1)(x^2+2)$ | $[\mathbb{Q},\mathbb{Q},\mathbb{Q},\mathbb{Q},K_2]$ | $-2^{21}3^{12}$ | $2^{11}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2\times\mathbb{Z}/2$ | 4 | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | 1 |
| | $-x(x+4)(2x-1)(x^2+2)$ | $[\mathbb{Q},\mathbb{Q},\mathbb{Q},\mathbb{Q},K_2]$ | $-2^{21}3^{12}$ | $2^{11}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2\times\mathbb{Z}/2$ | 4 | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | 1 |
| | $3(x^2-2)(x^2+1)(x^2+4)$ | $[K_1,K_1,K_3]$ | $2^{21}3^{22}$ | $2^{11}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | $3^2$ (*) |
| | $-3(x^2-2)(x^2+1)(x^2+4)$ | $[K_1,K_1,K_3]$ | $2^{21}3^{22}$ | $2^{11}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/4$ | 0 | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | $2\cdot 3^2$ |
| | $-(x^2-2)(x^2+2)(7x^2-16x-14)$ | $[K_2,K_3,K_3]$ | $-2^{51}3^{12}$ | $2^{11}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | $0_{\mathrm{LS}}$ | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | 1 |
| | $(x^2-2)(x^2+2)(7x^2+16x-14)$ | $[K_2,K_3,K_3]$ | $-2^{51}3^{12}$ | $2^{11}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/4$ | 0 | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | 2 |
| | $3(x^2-2)(x^4+68x^2+4)$ | $[K_3,L_1]$ | $2^{51}3^{22}$ | $2^{11}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | $3^2$ (*) |
| | $-3(x^2-2)(x^4+68x^2+4)$ | $[K_3,L_1]$ | $2^{51}3^{22}$ | $2^{11}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | $3^2$ (*) |
| | $(3x^2+2x+1)(x^4-4x^3-254x^2-252x-2047)$ | $[K_2,L_2]$ | $2^{54}3^{12}11^{12}$ | $2^{11}$ | 0 | $\mathbb{Z}/2$ | $0_{\mathrm{LS}}$ | $C_2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | □ |
| | $-(3x^2+2x+1)(x^4-4x^3-254x^2-252x-2047)$ | $[K_2,L_2]$ | $2^{54}3^{12}11^{12}$ | $2^{11}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | 2□ |
| 4 | lmfdb $(x-2)(x+2)(x^4-4x^2-4)$* | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{16}$ | $2^{12}$ | 1 | $\mathbb{Z}/8$ | 6 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $-(x^2-2)(x^4-2x^2+2)$ | $[K_3,L_7]$ | $2^{24}$ | $2^{12}$ | 1 | $\mathbb{Z}/8$ | 6 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $(x^2+2)(x^4+2x^2+2)$ | $[K_2,L_7]$ | $-2^{24}$ | $2^{12}$ | 1 | $\mathbb{Z}/4$ | 4 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $(x^2+1)(x^4-4x^2-4)$ | $[K_1,L_6]$ | $2^{26}$ | $2^{12}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $(x^2+4)(x^4+8x^3+4x^2-16x+28)$* | $[K_1,L_6]$ | $2^{16}5^{12}$ | $2^{12}$ | 1 | $\mathbb{Z}/4$ | 4 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | □ |
| | $-(2x+1)(x^4+4x^3-14x^2-4x+41)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{26}5^{12}$ | $2^{12}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | □ |
| 5 | lmfdb $(x-2)(x+2)(x^4-4x^2+8)$* | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{19}$ | $2^{12}$ | 0 | $\mathbb{Z}/8$ | 4 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $-(x^2-2)(x^4-2x^2-1)$ | $[K_3,L_6]$ | $-2^{21}$ | $2^{12}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |

| Isog Label | Simplified Weierstrass equation | Field system | $\Delta_{\min}$ | $N$ | Rank | $J(\mathbb{Q})_{\mathrm{tors}}$ | $\#C(\mathbb{Q})$ | $\mathrm{Aut}(C)$ | $\mathrm{Aut}(C_{\overline{\mathbb{Q}}})$ | $\mathrm{End}(J)\otimes\mathbb{Q}$ | $\mathrm{ST}(J)$ | $\lvert Ш_{\mathrm{an}}\rvert$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $(x^2+2)(x^4+2x^2-1)$ | $[K_2, L_6]$ | $2^{21}$ | $2^{12}$ | 0 | $\mathbb{Z}/4$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $-2(x^2+1)(x^4+2x^2+2)$ | $[K_1, L_7]$ | $-2^{29}$ | $2^{12}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $-5(x^2+2)(x^4+14x^2-1)$ | $[K_2, L_6]$ | $2^{21}5^{22}$ | $2^{12}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | $5^2$ $(*)$ |
| | $5(x^2-2)(x^4-14x^2-1)$ | $[K_3, L_6]$ | $-2^{21}5^{22}$ | $2^{12}$ | 0 | $\mathbb{Z}/8$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | $5^2$ |
| 6 | lmfdb $(x^2+4)(x^4+4x^2-4)$* | $[K_1, L_6]$ | $2^{16}$ | $2^{12}$ | 0 | $\mathbb{Z}/4$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $-(x^2+2)(x^4+2x^2+2)$ | $[K_2, L_7]$ | $-2^{24}$ | $2^{12}$ | 0 | $\mathbb{Z}/8$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 2 |
| | $(x^2-2)(x^4-2x^2+2)$ | $[K_3, L_7]$ | $2^{24}$ | $2^{12}$ | 0 | $\mathbb{Z}/4$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $-(x-1)(x+1)(x^4+4x^2-4)$ | $[\mathbb{Q}, \mathbb{Q}, L_6]$ | $-2^{26}$ | $2^{12}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $(4x-1)(4x^4-20x^2+16x+7)$* | $[\mathbb{Q}, \mathbb{Q}, L_6]$ | $-2^{16}5^{12}$ | $2^{12}$ | 0 | $\mathbb{Z}/8$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | □ |
| | $-(x^2+1)(4x^4-16x^3+4x^2+8x+7)$ | $[K_1, L_6]$ | $2^{26}5^{12}$ | $2^{12}$ | 0 | $\mathbb{Z}/2$ | $0_{\mathrm{LS}}$ | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | □ |
| 7 | lmfdb $(x^2+4)(x^4+4x^2+8)$* | $[K_1, L_7]$ | $-2^{19}$ | $2^{12}$ | 0 | $\mathbb{Z}/8$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $-(x^2+2)(x^4+2x^2-1)$ | $[K_2, L_6]$ | $2^{21}$ | $2^{12}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $(x^2-2)(x^4-2x^2-1)$ | $[K_3, L_6]$ | $-2^{21}$ | $2^{12}$ | 0 | $\mathbb{Z}/8$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $2(x-1)(x+1)(x^4-2x^2+2)$ | $[\mathbb{Q}, \mathbb{Q}, L_7]$ | $2^{29}$ | $2^{12}$ | 0 | $\mathbb{Z}/4$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $-5(x^2-2)(x^4-14x^2-1)$ | $[K_3, L_6]$ | $-2^{21}5^{22}$ | $2^{12}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | $5^2$ $(*)$ |
| | $5(x^2+2)(x^4+14x^2-1)$ | $[K_2, L_6]$ | $2^{21}5^{22}$ | $2^{12}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | $5^2$ $(*)$ |
| 8 | $-x(x^4-14x^2+81)$ | $[\mathbb{Q}, \mathbb{Q}, L_1]$ | $2^{26}3^{12}$ | $2^{12}$ | 0 | $\mathbb{Z}/4$ | 2 | $C_2^2$ | $D_4$ | $\mathrm{M}_2(\mathbb{Q})$ | $C_{2,1}$ | 1 |
| | $-2(2x-1)(x^2-2x+3)(x^2+2)$ | $[\mathbb{Q}, \mathbb{Q}, K_2, K_2]$ | $2^{26}3^{12}$ | $2^{12}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2^2$ | $D_4$ | $\mathrm{M}_2(\mathbb{Q})$ | $C_{2,1}$ | 1 |
| | $-6(x^2-2)(x^2+1)(2x^2-1)$ | $[K_1, K_3, K_3]$ | $-2^{26}3^{22}$ | $2^{12}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $D_4$ | $D_4$ | $\mathrm{M}_2(\mathbb{Q})$ | $C_{2,1}$ | $3^2$ |
| | $6(x^2-2)(x^2+1)(2x^2-1)$ | $[K_1, K_3, K_3]$ | $-2^{26}3^{22}$ | $2^{12}$ | 0 | $\mathbb{Z}/4\times\mathbb{Z}/4$ | 0 | $D_4$ | $D_4$ | $\mathrm{M}_2(\mathbb{Q})$ | $C_{2,1}$ | $2\cdot 3^2$ |
| 9 | lmfdb $(x-1)x(x+1)(x^2+1)$ | $[\mathbb{Q}, \mathbb{Q}, \mathbb{Q}, \mathbb{Q}, K_1]$ | $-2^{16}$ | $2^{12}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2\times\mathbb{Z}/2$ | 4 | $C_4$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $K_1$ | $J(C_2)$ | 1 |
| | $5(3x^2+2x+1)(x^4+28x^3-30x^2+36x-31)$ | $[K_2, L_6]$ | $2^{51}5^{22}$ | $2^{12}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $K_1$ | $J(C_2)$ | $5^2$ $(*)$ |
| | $-5(3x^2-2x+1)(x^4-28x^3-30x^2-36x-31)$ | $[K_2, L_6]$ | $2^{51}5^{22}$ | $2^{12}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2$ | $C_2^2$ | $K_1$ | $J(C_2)$ | $2\square$ |

| Isog Label | Simplified Weierstrass equation | Field system | $\Delta_{\mathbf{min}}$ | $N$ | Rank | $J(\mathbb{Q})_{\mathbf{tors}}$ | $\#C(\mathbb{Q})$ | $\mathbf{Aut}(C)$ | $\mathbf{Aut}(C_{\overline{\mathbb{Q}}})$ | $\mathbf{End}(J)\otimes\mathbb{Q}$ | $\mathbf{ST}(J)$ | $\lvert Ш_{\mathbf{an}}\rvert$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | lmfdb $x(x^2-2x-1)(x^2+1)$ | $[\mathbb{Q},\mathbb{Q},K_1,K_3]$ | $-2^{19}$ | $2^{12}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_4$ | $D_4$ | $K_1$ | $E_4$ | 1 |
| | $(5x+12)(12x-5)(x^2+1)(x^2+2x-1)$ | $[\mathbb{Q},\mathbb{Q},K_1,K_3]$ | $-2^{19}13^{12}$ | $2^{12}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_4$ | $D_4$ | $K_1$ | $E_4$ | 1 |
| 11 | $-(x^2+2)(2x^4+4x^2+1)$ | $[K_2,L_5]$ | $-2^{22}$ | $2^{13}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $(x^2-2)(2x^4-4x^2+1)$ | $[K_3,L_4]$ | $2^{22}$ | $2^{13}$ | 1 | $\mathbb{Z}/4$ | 4 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $(x-1)(x+1)(x^4-8x^2+8)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{27}$ | $2^{13}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $(x^2+1)(x^4+8x^2+8)$ | $[K_1,L_5]$ | $-2^{27}$ | $2^{13}$ | 1 | $\mathbb{Z}/4$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $-(x^2-2x-1)(2x^4+8x^3+8x^2-8x+7)$ | $[K_3,L_5]$ | $2^{22}7^{12}$ | $2^{13}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $-(2x-1)(x^4-8x^2+32x+136)$ | $[\mathbb{Q},\mathbb{Q},L_5]$ | $2^{27}7^{12}$ | $2^{13}$ | 1 | $\mathbb{Z}/4$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $-7(x^2+2)(2x^4-20x^2+1)$ | $[K_2,L_4]$ | $-2^{22}7^{22}$ | $2^{13}$ | 1 | $\mathbb{Z}/4$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | $7^2$ $(*)$ |
| | $7(x^2+1)(x^4-40x^2+8)$ | $[K_1,L_4]$ | $-2^{27}7^{22}$ | $2^{13}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | $7^2$ $(*)$ |
| 12 | $-(x^2+2)(x^4-4x^3+2x^2-4x+7)$ | $[K_2,L_2]$ | $2^{22}3^{12}$ | $2^{13}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{4,2}$ | 1 |
| | $(x^2+2)(x^4-4x^3+2x^2-4x+7)$ | $[K_2,L_2]$ | $2^{22}3^{12}$ | $2^{13}$ | 1 | $\mathbb{Z}/4$ | 4 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{4,2}$ | 1 |
| | $-3(x^2-2)(2x^4-8x^2-1)$ | $[K_3,L_2]$ | $-2^{22}3^{22}$ | $2^{13}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{4,2}$ | $3^2$ $(*)$ |
| | $3(x^2-2)(2x^4-8x^2-1)$ | $[K_3,L_2]$ | $-2^{22}3^{22}$ | $2^{13}$ | 1 | $\mathbb{Z}/4$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{4,2}$ | $3^2$ |
| 13 | $-(2x+1)(x^4+8x^3-8x^2+8)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{27}3^{12}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{4,2}$ | 1 |
| | $-(2x-1)(x^4-8x^3-8x^2+8)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{27}3^{12}$ | $2^{13}$ | 0 | $\mathbb{Z}/4$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{4,2}$ | 1 |
| | $3(x^2+1)(x^4-16x^2-8)$ | $[K_1,L_2]$ | $2^{27}3^{22}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{4,2}$ | $3^2$ $(*)$ |
| | $-3(x^2+1)(x^4-16x^2-8)$ | $[K_1,L_2]$ | $2^{27}3^{22}$ | $2^{13}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{4,2}$ | $2\cdot 3^2$ |
| 14 | $-(x^2-2)(2x^4-4x^2+1)$ | $[K_3,L_4]$ | $2^{22}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $(x^2+2)(2x^4+4x^2+1)$ | $[K_2,L_5]$ | $-2^{22}$ | $2^{13}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 2 |
| | $-(x^2+1)(x^4+8x^2+8)$ | $[K_1,L_5]$ | $-2^{27}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $-(x-1)(x+1)(x^4-8x^2+8)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{27}$ | $2^{13}$ | 0 | $\mathbb{Z}/4$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $(x^2-2x-1)(2x^4+8x^3+8x^2-8x+7)$ | $[K_3,L_5]$ | $2^{22}7^{12}$ | $2^{13}$ | 0 | $\mathbb{Z}/4$ | $0_{\mathrm{LS}}$ | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $(2x-1)(x^4-8x^2+32x+136)$ | $[\mathbb{Q},\mathbb{Q},L_5]$ | $2^{27}7^{12}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |

| Isog Label | Simplified Weierstrass equation | Field system | $\Delta_{\mathbf{min}}$ | $N$ | Rank | $J(\mathbb{Q})_{\mathbf{tors}}$ | $\#C(\mathbb{Q})$ | $\mathbf{Aut}(C)$ | $\mathbf{Aut}(C_{\overline{\mathbb{Q}}})$ | $\mathbf{End}(J)\otimes\mathbb{Q}$ | $\mathbf{ST}(J)$ | $\lvert Ш_{\mathbf{an}}\rvert$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $7(x^2+2)(2x^4-20x^2+1)$ | $[K_2, L_4]$ | $-2^{22}7^{22}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | $7^2$ $(*)$ |
| | $-7(x^2+1)(x^4-40x^2+8)$ | $[K_1, L_4]$ | $-2^{27}7^{22}$ | $2^{13}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | $2\cdot 7^2$ |
| 15 | lmf db $(x-1)(x+1)(x^4-2x^2+2)$ | $[\mathbb{Q}, \mathbb{Q}, L_7]$ | $2^{19}$ | $2^{13}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | lmf db $(x^2+1)(x^4+2x^2+2)$ | $[K_1, L_7]$ | $-2^{19}$ | $2^{13}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $(x^2+6x+1)(x^4+4x^3-2x^2+4x+1)^*$ | $[K_3, L_6]$ | $-2^{21}$ | $2^{13}$ | 1 | $\mathbb{Z}/4$ | 6 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $-(3x^2-2x+3)(x^4+4x^3-2x^2+4x+1)^*$ | $[K_2, L_6]$ | $2^{21}$ | $2^{13}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $5(3x^2+2x+3)(7x^4-4x^3-14x^2-4x+7)^*$ | $[K_2, L_6]$ | $2^{21}5^{22}$ | $2^{13}$ | 1 | $\mathbb{Z}/4$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | $2\cdot 5^2$ |
| | $-5(x^2-6x+1)(7x^4-4x^3-14x^2-4x+7)^*$ | $[K_3, L_6]$ | $-2^{21}5^{22}$ | $2^{13}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | $5^2$ $(*)$ |
| 16 | $-2(x^2+2)(x^4+2x^2+2)$ | $[K_2, L_7]$ | $-2^{34}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $2(x^2-2)(x^4-2x^2+2)$ | $[K_3, L_7]$ | $2^{34}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $-2(x-1)(x+1)(x^4+4x^2-4)$ | $[\mathbb{Q}, \mathbb{Q}, L_6]$ | $-2^{36}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | □ |
| | $-2(x^2+1)(x^4-4x^2-4)$ | $[K_1, L_6]$ | $2^{36}$ | $2^{13}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 2 |
| | $-2(2x-1)(x^4-4x^3-14x^2+4x+41)$ | $[\mathbb{Q}, \mathbb{Q}, L_6]$ | $-2^{36}5^{12}$ | $2^{13}$ | 0 | $\mathbb{Z}/4$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | □ |
| | $-2(x^2+1)(4x^4-16x^3+4x^2+8x+7)$ | $[K_1, L_6]$ | $2^{36}5^{12}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | $0_{\mathrm{LS}}$ | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| 17 | lmf db $-(x^2+1)(x^4+2x^2+2)$ | $[K_1, L_7]$ | $-2^{19}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | lmf db $-(x-1)(x+1)(x^4-2x^2+2)$ | $[\mathbb{Q}, \mathbb{Q}, L_7]$ | $2^{19}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $-2(x^2-2)(x^4-2x^2-1)$ | $[K_3, L_6]$ | $-2^{31}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | $0_{\mathrm{LS}}$ | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $2(x^2+2)(x^4+2x^2-1)$ | $[K_2, L_6]$ | $2^{31}$ | $2^{13}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 2 |
| | $-10(x^2+2)(x^4+14x^2-1)$ | $[K_2, L_6]$ | $2^{31}5^{22}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | $5^2$ $(*)$ |
| | $10(x^2-2)(x^4-14x^2-1)$ | $[K_3, L_6]$ | $-2^{31}5^{22}$ | $2^{13}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | $5^2$ $(*)$ |
| 18 | $-2(x^2-2)(x^4-2x^2+2)$ | $[K_3, L_7]$ | $2^{34}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $2(x^2+2)(x^4+2x^2+2)$ | $[K_2, L_7]$ | $-2^{34}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | □ |
| | $2(x-1)(x+1)(x^4+4x^2-4)$ | $[\mathbb{Q}, \mathbb{Q}, L_6]$ | $-2^{36}$ | $2^{13}$ | 0 | $\mathbb{Z}/4$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | □ |
| | $2(x^2+1)(x^4-4x^2-4)$ | $[K_1, L_6]$ | $2^{36}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | $0_{\mathrm{LS}}$ | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | □ |

| Isog Label | Simplified Weierstrass equation | Field system | $\Delta_{\mathbf{min}}$ | $N$ | Rank | $J(\mathbb{Q})_{\mathbf{tors}}$ | $\#C(\mathbb{Q})$ | $\mathbf{Aut}(C)$ | $\mathbf{Aut}(C_{\overline{\mathbb{Q}}})$ | $\mathbf{End}(J)\otimes\mathbb{Q}$ | $\mathbf{ST}(J)$ | $\lvert Ш_{\mathbf{an}}\rvert$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $2(2x-1)(x^4-4x^3-14x^2+4x+41)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{36}5^{12}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | □ |
| | $2(x^2+1)(4x^4-16x^3+4x^2+8x+7)$ | $[K_1,L_6]$ | $2^{36}5^{12}$ | $2^{13}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 2 |
| 19 | lmfdb $-(x-1)x(x+1)(x^2-2x-1)$ | $[\mathbb{Q},\mathbb{Q},\mathbb{Q},\mathbb{Q},K_3]$ | $2^{17}$ | $2^{13}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2\times\mathbb{Z}/2$ | 4 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_2)$ | 1 |
| | $x(x^4-8x^3+18x^2+8x+1)$ | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{25}$ | $2^{13}$ | 0 | $\mathbb{Z}/4$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $J(E_2)$ | 1 |
| | $2x(x^4-8x^3+18x^2+8x+1)$ | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{35}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $J(E_2)$ | □ |
| | $-(x^2-2x-1)(x^2-2x+3)(3x^2+2x+1)$ | $[K_2,K_2,K_3]$ | $2^{47}$ | $2^{13}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_2)$ | 2 |
| | $-7(x^2+2x+3)(31x^4-100x^3+30x^2+36x-1)$ | $[K_2,L_4]$ | $-2^{52}7^{22}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $J(E_2)$ | □ |
| | $7(x^2+2x+3)(31x^4-100x^3+30x^2+36x-1)$ | $[K_2,L_4]$ | $-2^{52}7^{22}$ | $2^{13}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $J(E_2)$ | 2□ |
| 20 | lmfdb $-(x-1)x(x+1)(x^2-2)$ | $[\mathbb{Q},\mathbb{Q},\mathbb{Q},\mathbb{Q},K_3]$ | $2^{15}$ | $2^{13}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2\times\mathbb{Z}/2$ | 4 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | lmfdb $x(x+4)(x^4-12x^2+16x-4)$* | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{17}$ | $2^{13}$ | 0 | $\mathbb{Z}/8$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $-2x(x^2+1)(x^2+2)$ | $[\mathbb{Q},\mathbb{Q},K_1,K_2]$ | $2^{25}$ | $2^{13}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $-(2x-3)(x^4+4x^3-6x^2-4x+1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{27}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | □ |
| | $3(x^2-2x-1)(x^2-2x+2)(x^2+4x+2)$ | $[K_1,K_3,K_3]$ | $-2^{22}3^{22}$ | $2^{13}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | $2\cdot3^2$ |
| | $-3(x^2-4x+2)(x^2+2x-1)(x^2+2x+2)$ | $[K_1,K_3,K_3]$ | $-2^{22}3^{22}$ | $2^{13}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/4$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | $2\cdot3^2$ |
| | $21(x^2+4x+8)(17x^4-32x^3-44x^2+80x-4)$* | $[K_1,L_4]$ | $-2^{17}3^{22}7^{22}$ | $2^{13}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | □ |
| | $21(2x^2-2x+1)(x^4+40x^3+44x^2-64x-68)$ | $[K_1,L_4]$ | $-2^{27}3^{22}7^{22}$ | $2^{13}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | □ |
| 21 | $(x^2+1)(x^4+1)$ | $[K_1,L_1]$ | $-2^{22}$ | $2^{14}$ | 2 | $\mathbb{Z}/2$ | 8* | $D_4$ | $D_4$ | $\mathrm{M}_2(\mathbb{Q})$ | $E_1$ | 1 |
| 22 | $(x^2-2x+2)(x^2-2)(x^2+2x+2)$ | $[K_1,K_1,K_3]$ | $2^{37}$ | $2^{14}$ | 1 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | 1 |
| | $(x^2-4x+2)(x^2-2)(x^2+4x+2)$ | $[K_3,K_3,K_3]$ | $2^{47}$ | $2^{14}$ | 1 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | 1 |
| | $-(x-1)(x^4+40x^3+20x^2+16x+4)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{31}3^{12}$ | $2^{14}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | 1 |
| | $2(x-1)(x^4+40x^3+20x^2+16x+4)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{41}3^{12}$ | $2^{14}$ | 1 | $\mathbb{Z}/2$ | 2* | $C_2$ | $C_2$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | □ |
| 23 | $-x(x^2-2x-1)(x^2+2x-1)$ | $[\mathbb{Q},\mathbb{Q},K_3,K_3]$ | $2^{22}$ | $2^{14}$ | 1 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 4 | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | 1 |
| | $(x-1)(x+1)(x^4+1)$ | $[\mathbb{Q},\mathbb{Q},L_1]$ | $2^{22}$ | $2^{14}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | 1 |

| Isog Label | Simplified Weierstrass equation | Field system | $\Delta_{\mathbf{min}}$ | $N$ | Rank | $J(\mathbb{Q})_{\mathbf{tors}}$ | $\#C(\mathbb{Q})$ | $\mathbf{Aut}(C)$ | $\mathbf{Aut}(C_{\overline{\mathbb{Q}}})$ | $\mathbf{End}(J)\otimes\mathbb{Q}$ | $\mathbf{ST}(J)$ | $\lvert Ш_{\mathbf{an}}\rvert$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $-(x^2-2x-1)(x^4-8x^3+18x^2+8x+1)$ | $[K_3, L_7]$ | $2^{40}$ | $2^{14}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | □ |
| 24 | $(x^2-2x+2)(x^2+2)(x^2+2x+2)$ | $[K_1, K_1, K_2]$ | $-2^{37}$ | $2^{14}$ | 1 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | 1 |
| | $(x^2+2)(x^4+12x^2+4)$ | $[K_2, L_1]$ | $-2^{47}$ | $2^{14}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | 1 |
| | $(x^2-2x-1)(x^4+4x^3+66x^2-4x+577)$ | $[K_3, L_5]$ | $2^{52}7^{12}$ | $2^{14}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | □ |
| 25 | $-2(x^2+1)(x^4+1)$ | $[K_1, L_1]$ | $-2^{32}$ | $2^{14}$ | 0 | $\mathbb{Z}/2$ | 0 | $D_4$ | $D_4$ | $\mathrm{M}_2(\mathbb{Q})$ | $E_1$ | 1 |
| 26 | $-(x^2-2x+2)(x^2+2)(x^2+2x+2)$ | $[K_1, K_1, K_2]$ | $-2^{37}$ | $2^{14}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | 2 |
| | $-(x^2+2)(x^4+12x^2+4)$ | $[K_2, L_1]$ | $-2^{47}$ | $2^{14}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | 1 |
| | $-(x^2-2x-1)(x^4+4x^3+66x^2-4x+577)$ | $[K_3, L_5]$ | $2^{52}7^{12}$ | $2^{14}$ | 0 | $\mathbb{Z}/2$ | $0_{\mathrm{LS}}$ | $C_2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | □ |
| 27 | $-x(x^4+6x^2+1)$ | $[\mathbb{Q}, \mathbb{Q}, L_1]$ | $2^{22}$ | $2^{14}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | 1 |
| | $-2x(x^2-2x-1)(x^2+2x-1)$ | $[\mathbb{Q}, \mathbb{Q}, K_3, K_3]$ | $2^{32}$ | $2^{14}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | 1 |
| | $-(x^2+2x-1)(5x^4+8x^3-6x^2-8x+5)$ | $[K_3, L_7]$ | $2^{40}$ | $2^{14}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | 2□ |
| 28 | $-(x^2+1)(x^4+1)$ | $[K_1, L_1]$ | $-2^{22}$ | $2^{14}$ | 0 | $\mathbb{Z}/2$ | 0 | $D_4$ | $D_4$ | $\mathrm{M}_2(\mathbb{Q})$ | $E_1$ | 1 |
| 29 | $-(x^2-2x+2)(x^2-2)(x^2+2x+2)$ | $[K_1, K_1, K_3]$ | $2^{37}$ | $2^{14}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | 2 |
| | $-(x^2-4x+2)(x^2-2)(x^2+4x+2)$ | $[K_3, K_3, K_3]$ | $2^{47}$ | $2^{14}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $C_2^2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | 1 |
| | $(x-1)(x^4+40x^3+20x^2+16x+4)$ | $[\mathbb{Q}, \mathbb{Q}, L_2]$ | $-2^{31}3^{12}$ | $2^{14}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | 1 |
| | $-2(x-1)(x^4+40x^3+20x^2+16x+4)$ | $[\mathbb{Q}, \mathbb{Q}, L_2]$ | $-2^{41}3^{12}$ | $2^{14}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}\times\mathbb{Q}$ | $J(E_1)$ | □ |
| 30 | $2(x^2+1)(x^4+1)$ | $[K_1, L_1]$ | $-2^{32}$ | $2^{14}$ | 0 | $\mathbb{Z}/2$ | 0 | $D_4$ | $D_4$ | $\mathrm{M}_2(\mathbb{Q})$ | $E_1$ | 1 |
| 31 | $(x^2+8)(x^4+8x^2+8)^*$ | $[K_2, L_5]$ | $-2^{22}$ | $2^{14}$ | 1 | $\mathbb{Z}/4$ | 4 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $-(x^2+4)(x^4+4x^2+2)$ | $[K_1, L_5]$ | $-2^{27}$ | $2^{14}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $(x-2)(x+2)(x^4-4x^2+2)$ | $[\mathbb{Q}, \mathbb{Q}, L_4]$ | $2^{27}$ | $2^{14}$ | 1 | $\mathbb{Z}/8$ | 4 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $-2(x^2-2)(2x^4-4x^2+1)$ | $[K_3,L_4]$ | $2^{32}$ | $2^{14}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $(x^2-4x-4)(x^4+8x^3+16x^2-32x+56)^*$ | $[K_3,L_5]$ | $2^{22}7^{12}$ | $2^{14}$ | 1 | $\mathbb{Z}/4$ | 4 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | □ |
| | $-(4x+1)(2x^4-4x^2-8x+17)$ | $[\mathbb{Q},\mathbb{Q},L_5]$ | $2^{27}7^{12}$ | $2^{14}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $-7(x^2+4)(x^4-20x^2+2)$ | $[K_1,L_4]$ | $-2^{27}7^{22}$ | $2^{14}$ | 1 | $\mathbb{Z}/8$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | $2\cdot7^2$ |
| | $14(x^2+2)(2x^4-20x^2+1)$ | $[K_2,L_4]$ | $-2^{32}7^{22}$ | $2^{14}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | $7^2$ (∗) |
| 32 | $-x(x+4)(x^4-4x^2+8x+2)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{27}3^{12}$ | $2^{14}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{4,2}$ | 1 |
| | $(x-4)x(x^4-4x^2-8x+2)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{27}3^{12}$ | $2^{14}$ | 1 | $\mathbb{Z}/4$ | 6 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{4,2}$ | 1 |
| | $3(x^2+4)(x^4+8x^2-2)$ | $[K_1,L_2]$ | $2^{27}3^{22}$ | $2^{14}$ | 1 | $\mathbb{Z}/4$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{4,2}$ | $2\cdot3^2$ |
| | $-3(x^2+4)(x^4+8x^2-2)$ | $[K_1,L_2]$ | $2^{27}3^{22}$ | $2^{14}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{4,2}$ | $3^2$ |
| 33 | $-(3x^2+4x+4)(x^4-8x^3-8x^2+8)^*$ | $[K_2,L_2]$ | $2^{22}3^{12}$ | $2^{14}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{4,2}$ | □ |
| | $2(x^2+2)(x^4-4x^3+2x^2-4x+7)$ | $[K_2,L_2]$ | $2^{32}3^{12}$ | $2^{14}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{4,2}$ | 2 |
| | $-3(x^2-8)(x^4-16x^2-8)^*$ | $[K_3,L_2]$ | $-2^{22}3^{22}$ | $2^{14}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{4,2}$ | $3^2$ (∗) |
| | $6(x^2-2)(2x^4-8x^2-1)$ | $[K_3,L_2]$ | $-2^{32}3^{22}$ | $2^{14}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{4,2}$ | $3^2$ (∗) |
| 34 | $(x^2-8)(x^4-8x^2+8)^*$ | $[K_3,L_4]$ | $2^{22}$ | $2^{14}$ | 0 | $\mathbb{Z}/8$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $(x^2+4)(x^4+4x^2+2)$ | $[K_1,L_5]$ | $-2^{27}$ | $2^{14}$ | 0 | $\mathbb{Z}/4$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $-(x-2)(x+2)(x^4-4x^2+2)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{27}$ | $2^{14}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $-2(x^2+2)(2x^4+4x^2+1)$ | $[K_2,L_5]$ | $-2^{32}$ | $2^{14}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $-(4x-1)(2x^4-4x^2+8x+17)$ | $[\mathbb{Q},\mathbb{Q},L_5]$ | $2^{27}7^{12}$ | $2^{14}$ | 0 | $\mathbb{Z}/4$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $-2(x^2+2x-1)(2x^4-8x^3+8x^2+8x+7)$ | $[K_3,L_5]$ | $2^{32}7^{12}$ | $2^{14}$ | 0 | $\mathbb{Z}/2$ | $0_{\mathrm{LS}}$ | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $-7(x^2+8)(x^4-40x^2+8)^*$ | $[K_2,L_4]$ | $-2^{22}7^{22}$ | $2^{14}$ | 0 | $\mathbb{Z}/8$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | $2\cdot7^2$ |
| | $7(x^2+4)(x^4-20x^2+2)$ | $[K_1,L_4]$ | $-2^{27}7^{22}$ | $2^{14}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | $7^2$ |
| 35 | $-3(x^2-2x-1)(x^2+4x+5)(5x^2-4x+1)$ | $[K_1,K_1,K_3]$ | $2^{41}3^{22}$ | $2^{14}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $C_2$ | $D_4$ | $K_1$ | $J(C_2)$ | $2\cdot3^2$ |
| | $3(x^2-2x-1)(17x^4+4x^3+34x^2-4x+17)$ | $[K_3,L_1]$ | $2^{51}3^{22}$ | $2^{14}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $D_4$ | $K_1$ | $J(C_2)$ | □ |

| Isog Label | Simplified Weierstrass equation | Field system | $\Delta_{\mathbf{min}}$ | $N$ | Rank | $J(\mathbb{Q})_{\mathbf{tors}}$ | $\#C(\mathbb{Q})$ | $\mathbf{Aut}(C)$ | $\mathbf{Aut}(C_{\overline{\mathbb{Q}}})$ | $\mathbf{End}(J)\otimes\mathbb{Q}$ | $\mathbf{ST}(J)$ | $\lvert Ш_{\mathbf{an}}\rvert$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 36 | $-x(x^2-2x+2)(x^2+2x+2)$ | $[\mathbb{Q},\mathbb{Q},K_1,K_1]$ | $2^{26}$ | $2^{14}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $K_2$ | $J(C_2)$ | 1 |
| | $-5(x^2-4x+2)(x^4+32x^3+60x^2+64x+4)$ | $[K_3,L_6]$ | $-2^{51}5^{22}$ | $2^{14}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2$ | $C_2^2$ | $K_2$ | $J(C_2)$ | □ |
| | $5(x^2-4x+2)(x^4+32x^3+60x^2+64x+4)$ | $[K_3,L_6]$ | $-2^{51}5^{22}$ | $2^{14}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $K_2$ | $J(C_2)$ | □ |
| 37 | $2x(x^2+1)(x^2+2x-1)$ | $[\mathbb{Q},\mathbb{Q},K_1,K_3]$ | $-2^{29}$ | $2^{14}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_4$ | $D_4$ | $K_1$ | $E_4$ | 1 |
| | $-2(5x+12)(12x-5)(x^2+1)(x^2+2x-1)$ | $[\mathbb{Q},\mathbb{Q},K_1,K_3]$ | $-2^{29}13^{12}$ | $2^{14}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_4$ | $D_4$ | $K_1$ | $E_4$ | $5^2$ |
| 38 | $2x(x^2-2x-1)(x^2+1)$ | $[\mathbb{Q},\mathbb{Q},K_1,K_3]$ | $-2^{29}$ | $2^{14}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_4$ | $D_4$ | $K_1$ | $E_4$ | 1 |
| | $2(5x+12)(12x-5)(x^2+1)(x^2+2x-1)$ | $[\mathbb{Q},\mathbb{Q},K_1,K_3]$ | $-2^{29}13^{12}$ | $2^{14}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_4$ | $D_4$ | $K_1$ | $E_4$ | 1 |
| 39 | lmfdb $-x(x^2+1)(x^2+2)$ | $[\mathbb{Q},\mathbb{Q},K_1,K_2]$ | $2^{15}$ | $2^{14}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $-2(x-1)x(x+1)(x^2-2)$ | $[\mathbb{Q},\mathbb{Q},\mathbb{Q},\mathbb{Q},K_3]$ | $2^{25}$ | $2^{14}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2\times\mathbb{Z}/2$ | 4 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $-2(2x-3)(x^4+4x^3-6x^2-4x+1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{37}$ | $2^{14}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | □ |
| | $2(2x-3)(x^4+4x^3-6x^2-4x+1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{37}$ | $2^{14}$ | 0 | $\mathbb{Z}/4$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | □ |
| | $6(x^2-2x-1)(x^2-2x+2)(x^2+4x+2)$ | $[K_1,K_3,K_3]$ | $-2^{32}3^{22}$ | $2^{14}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | $2\cdot 3^2$ |
| | $-6(x^2-4x+2)(x^2+2x-1)(x^2+2x+2)$ | $[K_1,K_3,K_3]$ | $-2^{32}3^{22}$ | $2^{14}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | $3^2$ $(*)$ |
| | $42(2x^2-2x+1)(x^4+40x^3+44x^2-64x-68)$ | $[K_1,L_4]$ | $-2^{37}3^{22}7^{22}$ | $2^{14}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | □ |
| | $-42(2x^2-2x+1)(x^4+40x^3+44x^2-64x-68)$ | $[K_1,L_4]$ | $-2^{37}3^{22}7^{22}$ | $2^{14}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | 2□ |
| 40 | $(x^2+4)(x^4-8)^*$ | $[K_1,L_2]$ | $2^{21}$ | $2^{15}$ | 2 | $\mathbb{Z}/2$ | $6^*$ | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $(x^2-2)(x^4-2)$ | $[K_3,L_2]$ | $-2^{26}$ | $2^{15}$ | 2 | $\mathbb{Z}/2$ | $12^*$ | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $(x-4)x(x^4+8x^3-8x^2+8)^*$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{21}3^{12}$ | $2^{15}$ | 2 | $\mathbb{Z}/2$ | $10^*$ | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $(x^2+2)(x^4-4x^2-8x+2)$ | $[K_2,L_2]$ | $2^{26}3^{12}$ | $2^{15}$ | 2 | $\mathbb{Z}/2$ | $8^*$ | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| 41 | $(x^2-2)(x^4-4x^2+2)$ | $[K_3,L_4]$ | $2^{26}$ | $2^{15}$ | 2 | $\mathbb{Z}/2$ | $10^*$ | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $(x^2+2)(x^4+4x^2+2)$ | $[K_2,L_5]$ | $-2^{26}$ | $2^{15}$ | 2 | $\mathbb{Z}/2$ | $8^*$ | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| 42 | $(x-2)(x+2)(x^4-8x^2+8)^*$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{21}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $(x^2+4)(x^4+8x^2+8)$* | $[K_1, L_5]$ | $-2^{21}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| 43 | $(x-2)(x+2)(x^4-8)$* | $[\mathbb{Q}, \mathbb{Q}, L_2]$ | $-2^{21}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $(x^2+2)(x^4-2)$ | $[K_2, L_2]$ | $2^{26}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $-3(x^2+4)(x^4-16x^2-8)$* | $[K_1, L_2]$ | $2^{21}3^{22}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | $2\cdot 3^2$ |
| | $-3(x^2-2)(x^4+8x^2-2)$ | $[K_3, L_2]$ | $-2^{26}3^{22}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | $3^2$ |
| 44 | $(x^2+1)(x^4-2)$ | $[K_1, L_2]$ | $2^{21}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $-2(x^2-2)(x^4-2)$ | $[K_3, L_2]$ | $-2^{36}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | $\square$ |
| | $-(2x+1)(x^4-4x^2-8x+2)$ | $[\mathbb{Q}, \mathbb{Q}, L_2]$ | $-2^{21}3^{12}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $-2(x^2+2)(x^4-4x^2-8x+2)$ | $[K_2, L_2]$ | $2^{36}3^{12}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | $\square$ |
| 45 | $-(x^2+1)(x^4+4x^2+2)$ | $[K_1, L_5]$ | $-2^{21}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $(x-1)(x+1)(x^4-4x^2+2)$ | $[\mathbb{Q}, \mathbb{Q}, L_4]$ | $2^{21}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| 46 | $-2(x^2+2)(x^4+4x^2+2)$ | $[K_2, L_5]$ | $-2^{36}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 2 |
| | $-2(x^2-2)(x^4-4x^2+2)$ | $[K_3, L_4]$ | $2^{36}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | $\square$ |
| 47 | $-(x-1)(x+1)(x^4-2)$ | $[\mathbb{Q}, \mathbb{Q}, L_2]$ | $-2^{21}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $-2(x^2+2)(x^4-2)$ | $[K_2, L_2]$ | $2^{36}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | $2\square$ |
| | $-3(x^2+1)(x^4+8x^2-2)$ | $[K_1, L_2]$ | $2^{21}3^{22}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | $2\cdot 3^2$ |
| | $6(x^2-2)(x^4+8x^2-2)$ | $[K_3, L_2]$ | $-2^{36}3^{22}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | $\square$ |
| 48 | $-(x^2+2)(x^4-2)$ | $[K_2, L_2]$ | $2^{26}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $-2(x-1)(x+1)(x^4-2)$ | $[\mathbb{Q}, \mathbb{Q}, L_2]$ | $-2^{31}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $3(x^2-2)(x^4+8x^2-2)$ | $[K_3, L_2]$ | $-2^{26}3^{22}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | $3^2$ |
| | $-6(x^2+1)(x^4+8x^2-2)$ | $[K_1, L_2]$ | $2^{31}3^{22}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | $3^2$ (*) |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49 | $-(x^2+2)(x^4+4x^2+2)$ | $[K_2, L_5]$ | $-2^{26}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $-(x^2-2)(x^4-4x^2+2)$ | $[K_3, L_4]$ | $2^{26}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| 50 | $-2(x^2+1)(x^4+4x^2+2)$ | $[K_1, L_5]$ | $-2^{31}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 2 |
| | $2(x-1)(x+1)(x^4-4x^2+2)$ | $[\mathbb{Q}, \mathbb{Q}, L_4]$ | $2^{31}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| 51 | $-(x^2-2)(x^4-2)$ | $[K_3, L_2]$ | $-2^{26}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $2(x^2+1)(x^4-2)$ | $[K_1, L_2]$ | $2^{31}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 2 |
| | $-(x^2+2)(x^4-4x^2-8x+2)$ | $[K_2, L_2]$ | $2^{26}3^{12}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 2 |
| | $-2(2x+1)(x^4-4x^2-8x+2)$ | $[\mathbb{Q}, \mathbb{Q}, L_2]$ | $-2^{31}3^{12}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| 52 | $(x-1)(x+1)(x^4-2)$ | $[\mathbb{Q}, \mathbb{Q}, L_2]$ | $-2^{21}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $2(x^2+2)(x^4-2)$ | $[K_2, L_2]$ | $2^{36}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | □ |
| | $3(x^2+1)(x^4+8x^2-2)$ | $[K_1, L_2]$ | $2^{21}3^{22}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | $3^2$ |
| | $-6(x^2-2)(x^4+8x^2-2)$ | $[K_3, L_2]$ | $-2^{36}3^{22}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | □ |
| 53 | $(x^2+1)(x^4+4x^2+2)$ | $[K_1, L_5]$ | $-2^{21}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $-(x-1)(x+1)(x^4-4x^2+2)$ | $[\mathbb{Q}, \mathbb{Q}, L_4]$ | $2^{21}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| 54 | $2(x^2+2)(x^4+4x^2+2)$ | $[K_2, L_5]$ | $-2^{36}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 2□ |
| | $2(x^2-2)(x^4-4x^2+2)$ | $[K_3, L_4]$ | $2^{36}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | □ |
| 55 | $-(x^2+1)(x^4-2)$ | $[K_1, L_2]$ | $2^{21}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 2 |
| | $2(x^2-2)(x^4-2)$ | $[K_3, L_2]$ | $-2^{36}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | □ |
| | $(2x+1)(x^4-4x^2-8x+2)$ | $[\mathbb{Q}, \mathbb{Q}, L_2]$ | $-2^{21}3^{12}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 1 |
| | $2(x^2+2)(x^4-4x^2-8x+2)$ | $[K_2, L_2]$ | $2^{36}3^{12}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $N(G_{1,3})$ | 2□ |
| 56 | $(x+1)(x^2-2x-1)(x^2+1)$ | $[\mathbb{Q}, \mathbb{Q}, K_1, K_3]$ | $-2^{23}$ | $2^{15}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |

| Isog Label | Simplified Weierstrass equation | Field system | $\Delta_{\mathbf{min}}$ | $N$ | Rank | $J(\mathbb{Q})_{\mathbf{tors}}$ | $\#C(\mathbb{Q})$ | $\mathbf{Aut}(C)$ | $\mathbf{Aut}(C_{\overline{\mathbb{Q}}})$ | $\mathbf{End}(J)\otimes\mathbb{Q}$ | $\mathbf{ST}(J)$ | $\lvert Ш_{\mathbf{an}}\rvert$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $-(x^2+1)(x^4+4x^3-6x^2+12x-7)$ | $[K_1, L_6]$ | $2^{42}$ | $2^{15}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 2 |
| | $-(x^2-2x-1)(x^4-12x^3+18x^2+44x+17)$ | $[K_3, L_4]$ | $2^{50}$ | $2^{15}$ | 0 | $\mathbb{Z}/4$ | $0_{\mathrm{LS}}$ | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $-(2x^2+1)(4x^4-4x^2+32x-31)$ | $[K_2, L_2]$ | $2^{50}3^{12}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | $2\square$ |
| 57 | $x(x^2-2x+2)(x^2+2)$ | $[\mathbb{Q}, \mathbb{Q}, K_1, K_2]$ | $2^{23}$ | $2^{15}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $-x(x^4-8x^3+12x^2-16x+4)$ | $[\mathbb{Q}, \mathbb{Q}, L_6]$ | $-2^{32}$ | $2^{15}$ | 0 | $\mathbb{Z}/4$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $(x^2+2)(7x^4-16x^3+36x^2-32x+28)$ | $[K_2, L_5]$ | $-2^{50}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | $2\square$ |
| | $3(x^2+4x+2)(x^4-16x^3-4x^2-32x+4)$ | $[K_3, L_2]$ | $-2^{50}3^{22}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | $3^2$ $(*)$ |
| 58 | $(x-1)(x^2+1)(x^2+2x-1)$ | $[\mathbb{Q}, \mathbb{Q}, K_1, K_3]$ | $-2^{23}$ | $2^{15}$ | 1 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 4 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $(x^2+1)(x^4+4x^3-6x^2+12x-7)$ | $[K_1, L_6]$ | $2^{42}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | $\square$ |
| | $(x^2-2x-1)(x^4-12x^3+18x^2+44x+17)$ | $[K_3, L_4]$ | $2^{50}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $(2x^2+1)(4x^4-4x^2-32x-31)$ | $[K_2, L_2]$ | $2^{50}3^{12}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | $\square$ |
| 59 | $-x(x^2-2x+2)(x^2+2)$ | $[\mathbb{Q}, \mathbb{Q}, K_1, K_2]$ | $2^{23}$ | $2^{15}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $x(x^4-8x^3+12x^2-16x+4)$ | $[\mathbb{Q}, \mathbb{Q}, L_6]$ | $-2^{32}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $-(x^2+2)(7x^4+16x^3+36x^2+32x+28)$ | $[K_2, L_5]$ | $-2^{50}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | $2\square$ |
| | $-3(x^2-4x+2)(x^4+16x^3-4x^2+32x+4)$ | $[K_3, L_2]$ | $-2^{50}3^{22}$ | $2^{15}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | $\square$ |
| 60 | $-(x-1)(x^2-2x-1)(x^2+1)$ | $[\mathbb{Q}, \mathbb{Q}, K_1, K_3]$ | $-2^{23}$ | $2^{15}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $(x-1)(x^4+8x^3+4x^2-16x+4)$ | $[\mathbb{Q}, \mathbb{Q}, L_4]$ | $2^{29}$ | $2^{15}$ | 0 | $\mathbb{Z}/4$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $-2(x-1)(x^4+8x^3+4x^2-16x+4)$ | $[\mathbb{Q}, \mathbb{Q}, L_4]$ | $2^{39}$ | $2^{15}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $-(x^2-2x-1)(x^2+2x-1)(x^2+2x+3)$ | $[K_2, K_3, K_3]$ | $-2^{43}$ | $2^{15}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 2 |
| 61 | $-(x+1)(x^2+1)(x^2+2x-1)$ | $[\mathbb{Q}, \mathbb{Q}, K_1, K_3]$ | $-2^{23}$ | $2^{15}$ | 1 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 4 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $-(x-1)(x^4+8x^3+4x^2-16x+4)$ | $[\mathbb{Q}, \mathbb{Q}, L_4]$ | $2^{29}$ | $2^{15}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $2(x-1)(x^4+8x^3+4x^2-16x+4)$ | $[\mathbb{Q}, \mathbb{Q}, L_4]$ | $2^{39}$ | $2^{15}$ | 1 | $\mathbb{Z}/4$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | $\square$ |

| Isog Label | Simplified Weierstrass equation | Field system | $\Delta_{\mathbf{min}}$ | $N$ | Rank | $J(\mathbb{Q})_{\mathbf{tors}}$ | $\#C(\mathbb{Q})$ | $\mathbf{Aut}(C)$ | $\mathbf{Aut}(C_{\overline{\mathbb{Q}}})$ | $\mathbf{End}(J)\otimes\mathbb{Q}$ | $\mathbf{ST}(J)$ | $\lvert Ш_{\mathbf{an}}\rvert$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $(x^2-2x-1)(x^2+2x-1)(x^2+2x+3)$ | $[K_2,K_3,K_3]$ | $-2^{43}$ | $2^{15}$ | 1 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| 62 | $(x^2-2x-1)(x^2+1)(x^2+2x-1)$ | $[K_1,K_3,K_3]$ | $-2^{36}$ | $2^{16}$ | 2 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | $4^*$ | $D_4$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $\mathrm{M}_2(\mathbb{Q})$ | $C_{2,1}$ | 1 |
| | $(x^2-2)(x^4+12x^2+4)$ | $[K_3,L_1]$ | $2^{51}$ | $2^{16}$ | 2 | $\mathbb{Z}/2$ | $2^*$ | $C_2^2$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $\mathrm{M}_2(\mathbb{Q})$ | $C_{2,1}$ | □ |
| 63 | $-(x^2+1)(x^4-2x^2-1)$ | $[K_1,L_6]$ | $2^{24}$ | $2^{16}$ | 2 | $\mathbb{Z}/2$ | $6^*$ | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $(x-1)(x+1)(x^4+2x^2-1)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{24}$ | $2^{16}$ | 2 | $\mathbb{Z}/2$ | $10^*$ | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $-(x^2-2)(x^4+4x^2-4)$ | $[K_3,L_6]$ | $-2^{39}$ | $2^{16}$ | 2 | $\mathbb{Z}/2$ | $4^*$ | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | □ |
| | $(x^2+2)(x^4-4x^2-4)$ | $[K_2,L_6]$ | $2^{39}$ | $2^{16}$ | 2 | $\mathbb{Z}/2$ | $2^*$ | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | □ |
| 64 | $x(x^4-4x^3-2x^2-4x+1)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{24}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $2(x^2+1)(x^4-2x^2-1)$ | $[K_1,L_6]$ | $2^{34}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $(x^2+2)(x^4+4x^2-4)$ | $[K_2,L_6]$ | $2^{39}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $(x^2-2)(x^4-4x^2-4)$ | $[K_3,L_6]$ | $-2^{39}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | □ |
| 65 | lmfdb $x(x^4+1)$ | $[\mathbb{Q},\mathbb{Q},L_1]$ | $2^{16}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | 1 |
| | $-2x(x^4+1)$ | $[\mathbb{Q},\mathbb{Q},L_1]$ | $2^{26}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2^2$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | 1 |
| | $-(x^2-4x+2)(x^2+2)(x^2+4x+2)$ | $[K_2,K_3,K_3]$ | $-2^{51}$ | $2^{16}$ | 1 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $C_2^2$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | 2 |
| | $(x^2-4x+2)(x^2+2)(x^2+4x+2)$ | $[K_2,K_3,K_3]$ | $-2^{51}$ | $2^{16}$ | 1 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2^2$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | 1 |
| | $(2x^2-2x+1)(4x^4-16x^3-12x^2-8x-47)$ | $[K_1,L_6]$ | $2^{46}5^{12}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | □ |
| | $-(2x^2-2x+1)(4x^4-16x^3-12x^2-8x-47)$ | $[K_1,L_6]$ | $2^{46}5^{12}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | 2 |
| 67 | $-x(2x^2-8x+9)(2x^2+8x+9)$ | $[\mathbb{Q},\mathbb{Q},K_2,K_2]$ | $2^{36}3^{12}$ | $2^{16}$ | 1 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | $2^*$ | $C_2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | □ |
| | $-x(4x^4+28x^2+81)$ | $[\mathbb{Q},\mathbb{Q},L_1]$ | $2^{36}3^{12}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | $2^*$ | $C_2$ | $D_4$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | □ |
| | $(x+44)(x^4-16x^3-164x^2+1056x-3388)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{39}3^{12}11^{12}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | $2^*$ | $C_2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | □ |
| | $-(x+44)(x^4-16x^3-164x^2+1056x-3388)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{39}3^{12}11^{12}$ | $2^{16}$ | 1 | $\mathbb{Z}/4$ | $2^*$ | $C_2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $D_{2,1}$ | □ |
| 68 | $-(x-1)(x+1)(x^4+2x^2-1)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{24}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $(x^2+1)(x^4-2x^2-1)$ | $[K_1,L_6]$ | $2^{24}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $-(x^2+2)(x^4-4x^2-4)$ | $[K_2,L_6]$ | $2^{39}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | $2\square$ |
| | $(x^2-2)(x^4+4x^2-4)$ | $[K_3,L_6]$ | $-2^{39}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | $\square$ |
| 70 | $x(x^4+4x^3-2x^2+4x+1)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{24}$ | $2^{16}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 1 |
| | $-2(x^2+1)(x^4-2x^2-1)$ | $[K_1,L_6]$ | $2^{34}$ | $2^{16}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 2 |
| | $-(x^2-2)(x^4-4x^2-4)$ | $[K_3,L_6]$ | $-2^{39}$ | $2^{16}$ | 0 | $\mathbb{Z}/2$ | $0_{\mathrm{LS}}$ | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | $\square$ |
| | $-(x^2+2)(x^4+4x^2-4)$ | $[K_2,L_6]$ | $2^{39}$ | $2^{16}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $C_2^2$ | $\mathbb{Q}\times\mathbb{Q}$ | $F_{a,b}$ | 2 |
| 71 | $-(x^2-2x-1)(x^2+1)(x^2+2x-1)$ | $[K_1,K_3,K_3]$ | $-2^{36}$ | $2^{16}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $D_4$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $\mathrm{M}_2(\mathbb{Q})$ | $C_{2,1}$ | 2 |
| | $-(x^2-2)(x^4+12x^2+4)$ | $[K_3,L_1]$ | $2^{51}$ | $2^{16}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2^2$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $\mathrm{M}_2(\mathbb{Q})$ | $C_{2,1}$ | $\square$ |
| 72 | $-3(x^2-6x+7)(x^2+1)(7x^2+6x+1)$ | $[K_1,K_3,K_3]$ | $-2^{46}3^{22}$ | $2^{16}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $C_4$ | $D_4$ | $K_1$ | $J(C_2)$ | $2^2\cdot 3^2$ $(*)$ |
| | $3(x^2+1)(x^2+6x+7)(7x^2-6x+1)$ | $[K_1,K_3,K_3]$ | $-2^{46}3^{22}$ | $2^{16}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $C_4$ | $D_4$ | $K_1$ | $J(C_2)$ | $2\square$ |
| 73 | $x(x^2-2)(x^2+2)$ | $[\mathbb{Q},\mathbb{Q},K_2,K_3]$ | $-2^{26}$ | $2^{16}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $K_3$ | $D_{2,1}$ | 1 |
| | $(x^2-2x-1)(x^2+2x+3)(3x^2-2x+1)$ | $[K_2,K_2,K_3]$ | $2^{51}$ | $2^{16}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $C_2$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $K_3$ | $D_{2,1}$ | 2 |
| | $(x-3)(4x^4+16x^3-12x^2+8x-47)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{36}5^{12}$ | $2^{16}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $K_3$ | $D_{2,1}$ | $\square$ |
| | $-(x-3)(4x^4+16x^3-12x^2+8x-47)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{36}5^{12}$ | $2^{16}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $K_3$ | $D_{2,1}$ | $\square$ |
| 74 | $-x(x^2-4x+2)(x^2+4x+2)$ | $[\mathbb{Q},\mathbb{Q},K_3,K_3]$ | $2^{32}$ | $2^{16}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_2)$ | 1 |
| | $-x(x^4+12x^2+4)$ | $[\mathbb{Q},\mathbb{Q},L_1]$ | $2^{32}$ | $2^{16}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_2)$ | 1 |
| | $-7(x^2+2x+2)(x^4+32x^3-132x^2+64x+4)$ | $[K_1,L_4]$ | $-2^{47}7^{22}$ | $2^{16}$ | 0 | $\mathbb{Z}/4$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $J(E_2)$ | $2\square$ |
| | $7(x^2-2x+2)(x^4-32x^3-132x^2-64x+4)$ | $[K_1,L_4]$ | $-2^{47}7^{22}$ | $2^{16}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $J(E_2)$ | $7^2$ $(*)$ |
| 75 | $-(x^2-2x+3)(x^2+1)(x^2+2x-1)$ | $[K_1,K_2,K_3]$ | $2^{38}$ | $2^{16}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 2 |
| | $-(x^2+1)(7x^4+12x^3+30x^2+20x+23)$ | $[K_1,L_5]$ | $-2^{45}$ | $2^{16}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | $2\square$ |
| | $-(x^2+2x-1)(x^4+4x^3-6x^2+12x-7)$ | $[K_3,L_6]$ | $-2^{47}$ | $2^{16}$ | 0 | $\mathbb{Z}/2$ | $0_{\mathrm{LS}}$ | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |

| Isog Label | Simplified Weierstrass equation | Field system | $\Delta_{\mathbf{min}}$ | $N$ | Rank | $J(\mathbb{Q})_{\mathbf{tors}}$ | $\#C(\mathbb{Q})$ | $\mathbf{Aut}(C)$ | $\mathbf{Aut}(C_{\overline{\mathbb{Q}}})$ | $\mathbf{End}(J)\otimes\mathbb{Q}$ | $\mathbf{ST}(J)$ | $\lvert Ш_{\mathbf{an}}\rvert$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $-(x+1)(4x^4-16x^3+20x^2-40x+1)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{35}3^{12}$ | $2^{16}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | □ |
| 76 | $x(x^2-4x+2)(x^2+2)$ | $[\mathbb{Q},\mathbb{Q},K_2,K_3]$ | $-2^{28}$ | $2^{16}$ | 1 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 4 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $-x(x^4-16x^3+60x^2-32x+4)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{35}$ | $2^{16}$ | 1 | $\mathbb{Z}/4$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $(x^2+2)(x^4-8x^3+12x^2-16x+4)$ | $[K_2,L_6]$ | $2^{47}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $-3(x^2+2x+2)(x^4+16x^3-4x^2+32x+4)$ | $[K_1,L_2]$ | $2^{45}3^{22}$ | $2^{16}$ | 1 | $\mathbb{Z}/4$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 2□ |
| 77 | $(x^2-2x+3)(x^2+1)(x^2+2x-1)$ | $[K_1,K_2,K_3]$ | $2^{38}$ | $2^{16}$ | 1 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $(x^2+1)(7x^4-12x^3+30x^2-20x+23)$ | $[K_1,L_5]$ | $-2^{45}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 2 |
| | $(x^2+2x-1)(x^4+4x^3-6x^2+12x-7)$ | $[K_3,L_6]$ | $-2^{47}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $(x+1)(4x^4-16x^3+20x^2-40x+1)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{35}3^{12}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | □ |
| 78 | $-(x^2-2x+3)(x^2+1)(3x^2+2x+1)$ | $[K_1,K_2,K_2]$ | $-2^{42}$ | $2^{16}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $C_4$ | $D_4$ | $K_1$ | $E_2$ | 2 |
| | $(x-3)(4x^4+16x^3+84x^2+200x+289)$ | $[\mathbb{Q},\mathbb{Q},L_5]$ | $2^{37}7^{12}$ | $2^{16}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $K_1$ | $E_2$ | □ |
| 79 | $(x^2+1)(x^2+2x+3)(3x^2-2x+1)$ | $[K_1,K_2,K_2]$ | $-2^{42}$ | $2^{16}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $C_4$ | $D_4$ | $K_1$ | $E_2$ | 2 |
| | $(x+3)(4x^4-16x^3+84x^2-200x+289)$ | $[\mathbb{Q},\mathbb{Q},L_5]$ | $2^{37}7^{12}$ | $2^{16}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $K_1$ | $E_2$ | □ |
| 80 | $-x(x^2-4x+2)(x^2+2)$ | $[\mathbb{Q},\mathbb{Q},K_2,K_3]$ | $-2^{28}$ | $2^{16}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $x(x^4-16x^3+60x^2-32x+4)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{35}$ | $2^{16}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $-(x^2+2)(x^4-8x^3+12x^2-16x+4)$ | $[K_2,L_6]$ | $2^{47}$ | $2^{16}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 2 |
| | $3(x^2-2x+2)(x^4-16x^3-4x^2-32x+4)$ | $[K_1,L_2]$ | $2^{45}3^{22}$ | $2^{16}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | $3^2$ (*) |
| 81 | $-(x-1)(x^4+4x^2-4)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{24}$ | $2^{16}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $(x-1)(x^2-2x-1)(x^2+2x-1)$ | $[\mathbb{Q},\mathbb{Q},K_3,K_3]$ | $2^{26}$ | $2^{16}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $2(x-1)(x^4+4x^2-4)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{34}$ | $2^{16}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $-(x^2+1)(x^2+2x-1)(x^2+2x+3)$ | $[K_1,K_2,K_3]$ | $2^{36}$ | $2^{16}$ | 0 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 0 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 82 | $(x-1)(x^4+4x^2-4)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{24}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $-(x-1)(x^2-2x-1)(x^2+2x-1)$ | $[\mathbb{Q},\mathbb{Q},K_3,K_3]$ | $2^{26}$ | $2^{16}$ | 1 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 4 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $-2(x-1)(x^4+4x^2-4)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{34}$ | $2^{16}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $(x^2+1)(x^2+2x-1)(x^2+2x+3)$ | $[K_1,K_2,K_3]$ | $2^{36}$ | $2^{16}$ | 1 | $\mathbb{Z}/2\times\mathbb{Z}/2$ | 2 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| 83 | $-(x^2-2x-1)(x^4-4x^3-6x^2+4x+1)$ | $[K_3,L_4]$ | $2^{40}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | □ |
| | $-(x^2-2x-1)(x^4-4x^3+10x^2+4x+1)$ | $[K_3,L_3]$ | $2^{40}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| 84 | $x(x^4-4x^3-6x^2+4x+1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{25}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $2x(x^4+4x^3+10x^2-4x+1)$ | $[\mathbb{Q},\mathbb{Q},L_3]$ | $2^{35}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| 85 | $(x^2+2x-1)(x^4-4x^3-6x^2+4x+1)$ | $[K_3,L_4]$ | $2^{40}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | □ |
| | $-(x^2-2x-1)(3x^4-4x^3-2x^2+4x+3)$ | $[K_3,L_3]$ | $2^{40}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 2□ |
| 86 | $-x(x^4-4x^3+10x^2+4x+1)$ | $[\mathbb{Q},\mathbb{Q},L_3]$ | $2^{25}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $-2x(x^4+4x^3-6x^2-4x+1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{35}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| 87 | $x(x^4+8x^3+4x^2-16x+4)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{33}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $(x^2-2)(x^4+4x^3+4x^2-8x+4)$ | $[K_3,L_7]$ | $2^{44}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| 88 | $-x(x^4+4x^3+4x^2-8x+4)$ | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{29}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $(x^2-2)(x^4+8x^3+4x^2-16x+4)$ | $[K_3,L_4]$ | $2^{48}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| 89 | $x(x^4+4x^3+4x^2-8x+4)$ | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{29}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $-(x^2-2)(x^4+8x^3+4x^2-16x+4)$ | $[K_3,L_4]$ | $2^{48}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| 90 | $-x(x^4+8x^3+4x^2-16x+4)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{33}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $-(x^2-2)(x^4+4x^3+4x^2-8x+4)$ | $[K_3,L_7]$ | $2^{44}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 91 | $-x(x^4-8x^3+28x^2-16x+4)$ | $[\mathbb{Q},\mathbb{Q},L_3]$ | $2^{33}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $-(x^2+2)(x^4-4x^3+12x^2-8x+4)$ | $[K_2,L_7]$ | $-2^{44}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 2 |
| 92 | $(x^2+1)(3x^4+4x^3+14x^2+12x+11)$ | $[K_1,L_3]$ | $-2^{43}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 2 |
| | $(x^2+2x-1)(x^4+6x^2-8x+5)$ | $[K_3,L_7]$ | $2^{44}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| 93 | $(x^2+1)(x^4+6x^2-8x+5)$ | $[K_1,L_7]$ | $-2^{39}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | □ |
| | $(x^2-2x-1)(x^4-4x^3+10x^2+20x+9)$ | $[K_3,L_3]$ | $2^{48}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| 94 | $-x(x^4-4x^3+12x^2-8x+4)$ | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{29}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $-(x^2+2)(3x^4-8x^3+20x^2-16x+12)$ | $[K_2,L_3]$ | $-2^{48}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| 95 | $x(x^4-4x^3+12x^2-8x+4)$ | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{29}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $(x^2+2)(3x^4+8x^3+20x^2+16x+12)$ | $[K_2,L_3]$ | $-2^{48}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | $0_{\mathrm{LS}}$ | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| 96 | $-(x^2+1)(x^4+6x^2-8x+5)$ | $[K_1,L_7]$ | $-2^{39}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| | $-(x^2-2x-1)(x^4-4x^3+10x^2+20x+9)$ | $[K_3,L_3]$ | $2^{48}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| 97 | $-(x^2+1)(3x^4-4x^3+14x^2-12x+11)$ | $[K_1,L_3]$ | $-2^{43}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 2 |
| | $-(x^2+2x-1)(x^4+6x^2-8x+5)$ | $[K_3,L_7]$ | $2^{44}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 2 |
| 98 | $x(x^4-8x^3+28x^2-16x+4)$ | $[\mathbb{Q},\mathbb{Q},L_3]$ | $2^{33}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | □ |
| | $(x^2+2)(x^4-4x^3+12x^2-8x+4)$ | $[K_2,L_7]$ | $-2^{44}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2^2$ | $\mathbb{Q}$ | $N(G_{3,3})$ | 1 |
| 99 | lmfdb $-x(x^4+4x^3+4x^2+1)$ | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{17}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-x(x^4+4x^3-2x^2-12x+1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{25}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-2(x-1)(x^4+1)$ | $[\mathbb{Q},\mathbb{Q},L_1]$ | $2^{28}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $2(x^2+1)(x^4+4x^3+6x^2+4x+3)$ | $[K_1, L_3]$ | $-2^{35}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 2 |
| 100 | lmf db $x(x^4+4x^3+4x^2+1)$ | $[\mathbb{Q}, \mathbb{Q}, L_7]$ | $2^{17}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $x(x^4+4x^3-2x^2-12x+1)$ | $[\mathbb{Q}, \mathbb{Q}, L_4]$ | $2^{25}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $2(x-1)(x^4+1)$ | $[\mathbb{Q}, \mathbb{Q}, L_1]$ | $2^{28}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-2(x^2+1)(x^4+4x^3+6x^2+4x+3)$ | $[K_1, L_3]$ | $-2^{35}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 2 |
| 101 | lmf db $-(x+1)(x^4+1)$ | $[\mathbb{Q}, \mathbb{Q}, L_1]$ | $2^{18}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-x(x+2)(x^4-4x^2+2)$ | $[\mathbb{Q}, \mathbb{Q}, L_4]$ | $2^{25}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-(x^2+1)(x^4+4x^3+6x^2+4x+3)$ | $[K_1, L_3]$ | $-2^{25}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 2 |
| | $2x(x^4+4x^3+4x^2+1)$ | $[\mathbb{Q}, \mathbb{Q}, L_7]$ | $2^{27}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 102 | lmf db $-(x-1)(x^4+1)$ | $[\mathbb{Q}, \mathbb{Q}, L_1]$ | $2^{18}$ | $2^{17}$ | 2 | $\mathbb{Z}/2$ | $6^*$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $x(x+2)(x^4-4x^2+2)$ | $[\mathbb{Q}, \mathbb{Q}, L_4]$ | $2^{25}$ | $2^{17}$ | 2 | $\mathbb{Z}/2$ | $12^*$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $(x^2+1)(x^4+4x^3+6x^2+4x+3)$ | $[K_1, L_3]$ | $-2^{25}$ | $2^{17}$ | 2 | $\mathbb{Z}/2$ | $6^*$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-2x(x^4+4x^3+4x^2+1)$ | $[\mathbb{Q}, \mathbb{Q}, L_7]$ | $2^{27}$ | $2^{17}$ | 2 | $\mathbb{Z}/2$ | $8^*$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 103 | $(x-1)(x^4-4x^3-14x^2+4x+17)$ | $[\mathbb{Q}, \mathbb{Q}, L_4]$ | $2^{33}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-(x^2+2)(5x^4+4x^3+4x^2+8x+4)$ | $[K_2, L_7]$ | $-2^{44}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-(x^2-2)(3x^4+8x^3-12x^2-16x+44)$ | $[K_3, L_3]$ | $2^{54}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 2□ |
| | $-(3x^2+4x+2)(x^4+12x^2+4)$ | $[K_2, L_1]$ | $-2^{57}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 104 | $x(4x^4-20x^2-16x+1)$ | $[\mathbb{Q}, \mathbb{Q}, L_4]$ | $2^{33}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | □ |
| | $-(x^2+2x+3)(x^4-2x^2-8x+13)$ | $[K_2, L_7]$ | $-2^{44}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 2 |
| | $(x^2-2)(11x^4+8x^3-12x^2-16x+12)$ | $[K_3, L_3]$ | $2^{54}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 2□ |
| | $-(x^2+2x+3)(x^4-4x^3+18x^2-28x+17)$ | $[K_2, L_1]$ | $-2^{57}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 105 | $-(x-1)(x^4-4x^3-14x^2+4x+17)$ | $[\mathbb{Q}, \mathbb{Q}, L_4]$ | $2^{33}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |

| Isog Label | Simplified Weierstrass equation | Field system | $\Delta_{\mathbf{min}}$ | $N$ | Rank | $J(\mathbb{Q})_{\mathbf{tors}}$ | $\#C(\mathbb{Q})$ | $\mathbf{Aut}(C)$ | $\mathbf{Aut}(C_{\overline{\mathbb{Q}}})$ | $\mathbf{End}(J)\otimes\mathbb{Q}$ | $\mathbf{ST}(J)$ | $\lvert Ш_{\mathbf{an}}\rvert$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $(x^2+2)(5x^4+4x^3+4x^2+8x+4)$ | $[K_2, L_7]$ | $-2^{44}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 2 |
| | $(x^2-2)(3x^4+8x^3-12x^2-16x+44)$ | $[K_3, L_3]$ | $2^{54}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 2□ |
| | $(3x^2+4x+2)(x^4+12x^2+4)$ | $[K_2, L_1]$ | $-2^{57}$ | $2^{17}$ | 0 | $\mathbb{Z}/2$ | $0_{\mathrm{LS}}$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 106 | $x(4x^4-20x^2+16x+1)$ | $[\mathbb{Q}, \mathbb{Q}, L_4]$ | $2^{33}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | □ |
| | $(x^2+2x+3)(x^4-2x^2-8x+13)$ | $[K_2, L_7]$ | $-2^{44}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-(x^2-2)(11x^4+8x^3-12x^2-16x+12)$ | $[K_3, L_3]$ | $2^{54}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 2□ |
| | $(x^2+2x+3)(x^4-4x^3+18x^2-28x+17)$ | $[K_2, L_1]$ | $-2^{57}$ | $2^{17}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 111 | $-x(x^4+4x^2-4)$ | $[\mathbb{Q}, \mathbb{Q}, L_6]$ | $-2^{28}$ | $2^{18}$ | 2 | $\mathbb{Z}/2$ | $4^*$ | $C_2$ | $D_4$ | $K_3$ | $J(E_1)$ | 1 |
| 113 | $-x(x^4-4x^2-4)$ | $[\mathbb{Q}, \mathbb{Q}, L_6]$ | $-2^{28}$ | $2^{18}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $D_4$ | $K_3$ | $J(E_1)$ | 1 |
| 114 | $-(x^2+2)(x^4+4x^3+4x^2-8x+4)$ | $[K_2, L_7]$ | $-2^{46}$ | $2^{18}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $D_4$ | $K_3$ | $J(E_1)$ | 2 |
| 120 | $(x^2+2)(x^4+4x^3+4x^2-8x+4)$ | $[K_2, L_7]$ | $-2^{46}$ | $2^{18}$ | 2 | $\mathbb{Z}/2$ | $4^*$ | $C_2$ | $D_4$ | $K_3$ | $J(E_1)$ | 1 |
| 122 | lmfdb $x(x^4+2x^2-1)$ | $[\mathbb{Q}, \mathbb{Q}, L_6]$ | $-2^{18}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_2)$ | 1 |
| | $2x(x^4+2x^2-1)$ | $[\mathbb{Q}, \mathbb{Q}, L_6]$ | $-2^{28}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_2)$ | 1 |
| 123 | $-(x^2+2x-1)(x^4+6x^2+8x+5)$ | $[K_3, L_7]$ | $2^{46}$ | $2^{18}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $K_3$ | $D_{4,2}$ | 2 |
| | $-(x^2+2x-1)(x^4-4x^3-6x^2-12x-7)$ | $[K_3, L_6]$ | $-2^{51}$ | $2^{18}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $K_3$ | $D_{4,2}$ | 1 |
| 124 | $(x^2-2x-1)(x^4+6x^2-8x+5)$ | $[K_3, L_7]$ | $2^{46}$ | $2^{18}$ | 2 | $\mathbb{Z}/2$ | $4^*$ | $C_2$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $K_3$ | $D_{4,2}$ | 1 |
| | $(x^2+2x-1)(x^4-4x^3-6x^2-12x-7)$ | $[K_3, L_6]$ | $-2^{51}$ | $2^{18}$ | 2 | $\mathbb{Z}/2$ | $2^*$ | $C_2$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $K_3$ | $D_{4,2}$ | 1 |
| 125 | $(x^2+1)(x^4-8x^3+18x^2+8x+1)$ | $[K_1, L_7]$ | $-2^{45}$ | $2^{18}$ | 2 | $\mathbb{Z}/2$ | $4^*$ | $C_4$ | $D_4$ | $K_1$ | $E_4$ | 1 |

| Isog Label | Simplified Weierstrass equation | Field system | $\Delta_{\mathbf{min}}$ | $N$ | Rank | $J(\mathbb{Q})_{\mathbf{tors}}$ | $\#C(\mathbb{Q})$ | $\mathbf{Aut}(C)$ | $\mathbf{Aut}(C_{\overline{\mathbb{Q}}})$ | $\mathbf{End}(J)\otimes\mathbb{Q}$ | $\mathbf{ST}(J)$ | $\lvert Ш_{\mathbf{an}}\rvert$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 126 | $(x^2+1)(5x^4-8x^3-6x^2+8x+5)$ | $[K_1,L_7]$ | $-2^{45}$ | $2^{18}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_4$ | $D_4$ | $K_1$ | $E_4$ | 1 |
| 127 | $-(x^2+1)(5x^4+8x^3-6x^2-8x+5)$ | $[K_1,L_7]$ | $-2^{45}$ | $2^{18}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_4$ | $D_4$ | $K_1$ | $E_4$ | 1 |
| 128 | $-(x^2+1)(x^4+8x^3+18x^2-8x+1)$ | $[K_1,L_7]$ | $-2^{45}$ | $2^{18}$ | 0* | $\mathbb{Z}/2$ | 0 | $C_4$ | $D_4$ | $K_1$ | $E_4$ | $2^2$ |
| 129 | lmf db $-x(x^4+2x^2+2)$ | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{19}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $-2x(x^4-2x^2+2)$ | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{29}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $x(x^4-478x^2+57122)$ | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{19}13^{12}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 2* | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | □ |
| | $2x(x^4+478x^2+57122)$ | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{29}13^{12}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 2* | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | □ |
| 130 | lmf db $-x(x^4-2x^2+2)$ | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{19}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $-2x(x^4+2x^2+2)$ | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{29}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $x(x^4+478x^2+57122)$ | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{19}13^{12}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 2* | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | □ |
| | $2x(x^4-478x^2+57122)$ | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{29}13^{12}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 2* | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | □ |
| 131 | lmf db $x(x^4+4x^3+10x^2+8x+2)$ | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{19}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_2)$ | 1 |
| | lmf db $-x(x^4+4x^3+10x^2+8x+2)$ | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{19}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_2)$ | 1 |
| | $2x(x^4+4x^3+10x^2+8x+2)$ | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{29}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_2)$ | 1 |
| | $-2x(x^4+4x^3+10x^2+8x+2)$ | $[\mathbb{Q},\mathbb{Q},L_7]$ | $2^{29}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_2)$ | 1 |
| 132 | $(x-1)(x^4+4x^3+2x^2-4x-7)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{28}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_2)$ | 1 |
| | $-(x-1)(x^4+4x^3+2x^2-4x-7)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{28}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_2)$ | 1 |
| | $x(x+1)(x^4+4x^2-4)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{28}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_2)$ | 1 |
| | $-(x-1)x(x^4+4x^2-4)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{28}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $J(E_2)$ | 1 |
| 133 | $(x^2+2x+3)(x^4+6x^2-8x+5)$ | $[K_2,L_7]$ | $-2^{46}$ | $2^{18}$ | 2 | $\mathbb{Z}/2$ | 4* | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $(x^2-2x-1)(x^4+8x^3+22x^2+16x+5)$ | $[K_3,L_7]$ | $2^{46}$ | $2^{18}$ | 2 | $\mathbb{Z}/2$ | $4^*$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 134 | $(x^2+2x+3)(5x^4+8x^3+6x^2+1)$ | $[K_2,L_7]$ | $-2^{46}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 2 |
| | $(x^2+2x-1)(x^4-2x^2-8x+13)$ | $[K_3,L_7]$ | $2^{46}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 135 | $-(x^2+2x+3)(5x^4+8x^3+6x^2+1)$ | $[K_2,L_7]$ | $-2^{46}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-(x^2+2x-1)(x^4-2x^2-8x+13)$ | $[K_3,L_7]$ | $2^{46}$ | $2^{18}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 2 |
| 136 | $-(x^2-2x+3)(x^4+6x^2+8x+5)$ | $[K_2,L_7]$ | $-2^{46}$ | $2^{18}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 2 |
| | $-(x^2-2x-1)(x^4+8x^3+22x^2+16x+5)$ | $[K_3,L_7]$ | $2^{46}$ | $2^{18}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 2 |
| 161 | lmfdb $(x+1)(x^4-2)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{19}$ | $2^{19}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-2(x-1)(x^4-2x^2-1)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{30}$ | $2^{19}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 162 | lmfdb $(x-1)(x^4-2)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{19}$ | $2^{19}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $2(x-1)(x^4-2x^2-1)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{30}$ | $2^{19}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 163 | lmfdb $x(x^4+4x^3+2x^2-4x-1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{19}$ | $2^{19}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $2(x-1)(x^4+2x^2-1)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{30}$ | $2^{19}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 164 | lmfdb $-x(x^4+4x^3+2x^2-4x-1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{19}$ | $2^{19}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-2(x-1)(x^4+2x^2-1)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{30}$ | $2^{19}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 165 | $-(x-1)(x^4+2x^2-1)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{20}$ | $2^{19}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-2x(x^4+4x^3+2x^2-4x-1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{29}$ | $2^{19}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 166 | $(x-1)(x^4+2x^2-1)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{20}$ | $2^{19}$ | 2 | $\mathbb{Z}/2$ | $6^*$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |

| Isog Label | Simplified Weierstrass equation | Field system | $\Delta_{\mathbf{min}}$ | $N$ | Rank | $J(\mathbb{Q})_{\mathbf{tors}}$ | $\#C(\mathbb{Q})$ | $\mathbf{Aut}(C)$ | $\mathbf{Aut}(C_{\overline{\mathbb{Q}}})$ | $\mathbf{End}(J)\otimes\mathbb{Q}$ | $\mathbf{ST}(J)$ | $\lvert Ш_{\mathbf{an}}\rvert$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $2x(x^4+4x^3+2x^2-4x-1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{29}$ | $2^{19}$ | 2 | $\mathbb{Z}/2$ | $6^*$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 167 | $(x-1)(x^4-2x^2-1)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{20}$ | $2^{19}$ | 2 | $\mathbb{Z}/2$ | $6^*$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-2(x+1)(x^4-2)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{29}$ | $2^{19}$ | 2 | $\mathbb{Z}/2$ | $8^*$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 168 | $-(x-1)(x^4-2x^2-1)$ | $[\mathbb{Q},\mathbb{Q},L_6]$ | $-2^{20}$ | $2^{19}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $2(x+1)(x^4-2)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{29}$ | $2^{19}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 169 | $-(x+4)(x^4-12x^2+16x-4)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{29}$ | $2^{19}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $(2x^2-2x+1)(4x^4+32x^3+76x^2+32x-41)$ | $[K_1,L_6]$ | $2^{40}5^{12}$ | $2^{19}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 2 |
| 170 | $-(x+1)(x^4-4x^3-6x^2+4x+1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{29}$ | $2^{19}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-(x^2+1)(x^4-4x^3+2x^2+4x-7)$ | $[K_1,L_6]$ | $2^{40}$ | $2^{19}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 2 |
| 171 | $-(x+2)(4x^4-12x^2+8x-1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{29}$ | $2^{19}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-(x^2+2x+2)(23x^4-24x^3-52x^2+80x-28)$ | $[K_1,L_6]$ | $2^{40}5^{12}$ | $2^{19}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 172 | $(x+2)(4x^4-12x^2+8x-1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{29}$ | $2^{19}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $(x^2-2x+2)(23x^4+24x^3-52x^2-80x-28)$ | $[K_1,L_6]$ | $2^{40}5^{12}$ | $2^{19}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 2 |
| 173 | $-(x-1)(x^4+4x^3-6x^2-4x+1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{29}$ | $2^{19}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $(x^2+1)(x^4-4x^3+2x^2+4x-7)$ | $[K_1,L_6]$ | $2^{40}$ | $2^{19}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 174 | $(x+4)(x^4-12x^2+16x-4)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{29}$ | $2^{19}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-(2x^2-2x+1)(4x^4+32x^3+76x^2+32x-41)$ | $[K_1,L_6]$ | $2^{40}5^{12}$ | $2^{19}$ | 0 | $\mathbb{Z}/2$ | $0_{\mathrm{LS}}$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | $2^2$ |
| 175 | $(x+1)(x^4+4x^3-6x^2-4x+1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{29}$ | $2^{19}$ | 2 | $\mathbb{Z}/2$ | $6^*$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $(x^2+1)(x^4-4x^3+10x^2-12x+1)$ | $[K_1,L_6]$ | $2^{40}$ | $2^{19}$ | 2 | $\mathbb{Z}/2$ | $6^*$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |

| Isog Label | Simplified Weierstrass equation | Field system | $\Delta_{\mathbf{min}}$ | $N$ | Rank | $J(\mathbb{Q})_{\mathbf{tors}}$ | $\#C(\mathbb{Q})$ | $\mathbf{Aut}(C)$ | $\mathbf{Aut}(C_{\overline{\mathbb{Q}}})$ | $\mathbf{End}(J)\otimes\mathbb{Q}$ | $\mathbf{ST}(J)$ | $\lvert Ш_{\mathbf{an}}\rvert$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 176 | $-(x+1)(x^4+4x^3-6x^2-4x+1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{29}$ | $2^{19}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-(x^2+1)(x^4-4x^3+10x^2-12x+1)$ | $[K_1,L_6]$ | $2^{40}$ | $2^{19}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 2 |
| 177 | $-(x^2-2x-1)(x^4+12x^3+34x^2+20x+1)$ | $[K_3,L_4]$ | $2^{52}$ | $2^{19}$ | 2 | $\mathbb{Z}/2$ | $4^*$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | □ |
| | $(x^2-2x+3)(x^4-4x^3-6x^2-12x-7)$ | $[K_2,L_6]$ | $2^{53}$ | $2^{19}$ | 2 | $\mathbb{Z}/2$ | $2^*$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 178 | $(x^2+2x-1)(x^4+4x^3-14x^2-4x+17)$ | $[K_3,L_4]$ | $2^{52}$ | $2^{19}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $(x^2-2x+3)(7x^4-12x^3+6x^2-4x-1)$ | $[K_2,L_6]$ | $2^{53}$ | $2^{19}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 2 |
| 179 | $-(x^2+2x-1)(x^4+4x^3-14x^2-4x+17)$ | $[K_3,L_4]$ | $2^{52}$ | $2^{19}$ | 0 | $\mathbb{Z}/2$ | $0_{\mathrm{LS}}$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-(x^2-2x+3)(7x^4-12x^3+6x^2-4x-1)$ | $[K_2,L_6]$ | $2^{53}$ | $2^{19}$ | 0 | $\mathbb{Z}/2$ | $0_{\mathrm{LS}}$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | $2^2$ |
| 180 | $(x^2-2x-1)(x^4+12x^3+34x^2+20x+1)$ | $[K_3,L_4]$ | $2^{52}$ | $2^{19}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | □ |
| | $-(x^2+2x+3)(x^4+4x^3-6x^2+12x-7)$ | $[K_2,L_6]$ | $2^{53}$ | $2^{19}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 2 |
| 184 | $(x^2+2)(x^4-8x^3+4x^2+16x+4)$ | $[K_2,L_4]$ | $-2^{54}$ | $2^{20}$ | 2 | $\mathbb{Z}/2$ | $2^*$ | $C_2$ | $D_4$ | $K_3$ | $J(E_1)$ | 1 |
| 185 | $-(x^2+2)(x^4+8x^3+4x^2-16x+4)$ | $[K_2,L_4]$ | $-2^{54}$ | $2^{20}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $D_4$ | $K_3$ | $J(E_1)$ | 2 |
| 191 | $(x^2+2)(3x^4+16x^3+12x^2-32x+12)$ | $[K_2,L_3]$ | $-2^{60}$ | $2^{20}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $D_4$ | $K_3$ | $J(E_1)$ | 1 |
| 192 | $-(x^2+2)(3x^4+16x^3+12x^2-32x+12)$ | $[K_2,L_3]$ | $-2^{60}$ | $2^{20}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $D_4$ | $K_3$ | $J(E_1)$ | 1 |
| 207 | $-x(x^4+2)$ | $[\mathbb{Q},\mathbb{Q},L_3]$ | $2^{21}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $\mathbb{Q}$ | $D_{4,1}$ | 1 |
| | $-2x(x^4+2)$ | $[\mathbb{Q},\mathbb{Q},L_3]$ | $2^{31}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $\mathbb{Q}$ | $D_{4,1}$ | 1 |
| 208 | $-(x^2+1)(3x^4+4x^3-2x^2-4x+3)$ | $[K_1,L_3]$ | $-2^{41}$ | $2^{20}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_4$ | $D_4$ | $K_1$ | $E_4$ | 2 |

| Isog Label | Simplified Weierstrass equation | Field system | $\Delta_{\mathbf{min}}$ | $N$ | Rank | $J(\mathbb{Q})_{\mathbf{tors}}$ | $\#C(\mathbb{Q})$ | $\mathbf{Aut}(C)$ | $\mathbf{Aut}(C_{\overline{\mathbb{Q}}})$ | $\mathbf{End}(J)\otimes\mathbb{Q}$ | $\mathbf{ST}(J)$ | $\lvert Ш_{\mathbf{an}}\rvert$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 209 | $-(x^2+1)(x^4+4x^3+10x^2-4x+1)$ | $[K_1, L_3]$ | $-2^{41}$ | $2^{20}$ | 0* | $\mathbb{Z}/2$ | 0 | $C_4$ | $D_4$ | $K_1$ | $E_4$ | $2^2$ |
| 210 | $(x^2+1)(x^4-4x^3-6x^2+4x+1)$ | $[K_1, L_4]$ | $-2^{41}$ | $2^{20}$ | 2 | $\mathbb{Z}/2$ | $4^*$ | $C_4$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $K_1$ | $J(C_4)$ | 1 |
| 211 | $-(x^2+1)(x^4+4x^3-6x^2-4x+1)$ | $[K_1, L_4]$ | $-2^{41}$ | $2^{20}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_4$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $K_1$ | $J(C_4)$ | 2 |
| 212 | $(x^2+1)(x^4-4x^3+10x^2+4x+1)$ | $[K_1, L_3]$ | $-2^{41}$ | $2^{20}$ | 2 | $\mathbb{Z}/2$ | $4^*$ | $C_4$ | $D_4$ | $K_1$ | $E_4$ | 1 |
| 213 | $(x^2+1)(3x^4-4x^3-2x^2+4x+3)$ | $[K_1, L_3]$ | $-2^{41}$ | $2^{20}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_4$ | $D_4$ | $K_1$ | $E_4$ | 2 |
| 214 | $x(x^4-2)$ | $[\mathbb{Q}, \mathbb{Q}, L_2]$ | $-2^{21}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $\mathbb{Q}$ | $D_{4,1}$ | 1 |
| | $2x(x^4-2)$ | $[\mathbb{Q}, \mathbb{Q}, L_2]$ | $-2^{31}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $\mathrm{GL}_2(\mathbb{F}_3)$ | $\mathbb{Q}$ | $D_{4,1}$ | 1 |
| 215 | $-(x^2-2x-1)(x^4+4x^3+10x^2-20x+9)$ | $[K_3, L_3]$ | $2^{54}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $-(x^2+2x-1)(3x^4+4x^3+14x^2+12x+11)$ | $[K_3, L_3]$ | $2^{54}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 2 |
| 216 | $(x^2-2x-1)(x^4+4x^3+10x^2-20x+9)$ | $[K_3, L_3]$ | $2^{54}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $(x^2+2x-1)(3x^4+4x^3+14x^2+12x+11)$ | $[K_3, L_3]$ | $2^{54}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 2 |
| 217 | $(x^2-2x-1)(x^4+12x^3+18x^2-44x+17)$ | $[K_3, L_4]$ | $2^{60}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $(x^2+2x-1)(7x^4+12x^3+30x^2+20x+23)$ | $[K_3, L_5]$ | $2^{60}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | $0^*_{\mathrm{LS}}$ | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| 218 | $-(x^2-2x-1)(x^4+12x^3+18x^2-44x+17)$ | $[K_3, L_4]$ | $2^{60}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $-(x^2+2x-1)(7x^4+12x^3+30x^2+20x+23)$ | $[K_3, L_5]$ | $2^{60}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| 219 | $-x(x^4+4x^2+2)$ | $[\mathbb{Q}, \mathbb{Q}, L_5]$ | $2^{21}$ | $2^{20}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| | $-2x(x^4-4x^2+2)$ | $[\mathbb{Q}, \mathbb{Q}, L_4]$ | $2^{31}$ | $2^{20}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| 220 | $-x(x^4-4x^2+2)$ | $[\mathbb{Q}, \mathbb{Q}, L_4]$ | $2^{21}$ | $2^{20}$ | 2 | $\mathbb{Z}/2$ | $6^*$ | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $-2x(x^4+4x^2+2)$ | $[\mathbb{Q},\mathbb{Q},L_5]$ | $2^{31}$ | $2^{20}$ | 2 | $\mathbb{Z}/2$ | $4^*$ | $C_2$ | $D_4$ | $\mathbb{Q}$ | $J(E_4)$ | 1 |
| 221 | $(x-1)(2x^4-1)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{21}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $2x(2x^4+8x^3+8x^2-1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{31}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 222 | $-(x+1)(x^4-4x^3+2x^2+4x-1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{21}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $F_{ac}$ | 1 |
| | $-2(x+1)(x^4-4x^3+2x^2+4x-1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{31}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $F_{ac}$ | 1 |
| 223 | $x(2x^4+8x^3+8x^2-1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{21}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-2(x+1)(2x^4-1)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{31}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 224 | $-(x+1)(x^4-4x^3-2x^2+4x-1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{21}$ | $2^{20}$ | 2 | $\mathbb{Z}/2$ | $8^*$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-2(x-2)(2x^4+8x^3-4x^2+1)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{31}3^{12}$ | $2^{20}$ | 2 | $\mathbb{Z}/2$ | $6^*$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 225 | $-(x-1)(x^4+4x^3-2x^2-4x-1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{21}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $2(x-2)(2x^4+8x^3-4x^2+1)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{31}3^{12}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 226 | $(x+1)(2x^4-1)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{21}$ | $2^{20}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-2x(2x^4+8x^3+8x^2-1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{31}$ | $2^{20}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 227 | $-(x-1)(x^4+4x^3+2x^2-4x-1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{21}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $F_{ac}$ | 1 |
| | $2(x+1)(x^4-4x^3+2x^2+4x-1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{31}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 4 | $C_2$ | $C_2$ | $\mathbb{Q}$ | $F_{ac}$ | 1 |
| 228 | $-x(2x^4+8x^3+8x^2-1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{21}$ | $2^{20}$ | 2 | $\mathbb{Z}/2$ | $6^*$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $2(x+1)(2x^4-1)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{31}$ | $2^{20}$ | 2 | $\mathbb{Z}/2$ | $4^*$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 229 | $-2(x+1)(x^4-4x^3-2x^2+4x-1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{31}$ | $2^{20}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-(x-2)(2x^4+8x^3-4x^2+1)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{21}3^{12}$ | $2^{20}$ | 0 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |

| Isog Label | Simplified Weierstrass equation | Field system | $\Delta_{\mathbf{min}}$ | $N$ | Rank | $J(\mathbb{Q})_{\mathbf{tors}}$ | $\#C(\mathbb{Q})$ | $\mathbf{Aut}(C)$ | $\mathbf{Aut}(C_{\overline{\mathbb{Q}}})$ | $\mathbf{End}(J)\otimes\mathbb{Q}$ | $\mathbf{ST}(J)$ | $\lvert Ш_{\mathbf{an}}\rvert$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 230 | $2(x+1)(x^4-4x^3-2x^2+4x-1)$ | $[\mathbb{Q},\mathbb{Q},L_4]$ | $2^{31}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $(x-2)(2x^4+8x^3-4x^2+1)$ | $[\mathbb{Q},\mathbb{Q},L_2]$ | $-2^{21}3^{12}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| 231 | $-(2x^2-1)(4x^4-36x^2+32x+17)$ | $[K_3,L_4]$ | $2^{60}$ | $2^{20}$ | 0 | $\mathbb{Z}/2$ | $0_{\mathrm{LS}}$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $3(x^2-6x+7)(x^4-12x^3-46x^2-84x-47)$ | $[K_3,L_2]$ | $-2^{60}3^{22}$ | $2^{20}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | $3^2$ $(*)$ |
| 232 | $(x^2-2x-1)(x^4-4x^3-30x^2+4x+97)$ | $[K_3,L_4]$ | $2^{60}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 2 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-3(2x^2+4x+1)(4x^4+16x^3-76x^2+104x-47)$ | $[K_3,L_2]$ | $-2^{60}3^{22}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | $3^2$ $(*)$ |
| 233 | $(2x^2-1)(4x^4-36x^2+32x+17)$ | $[K_3,L_4]$ | $2^{60}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | $0^*_{\mathrm{LS}}$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $-3(x^2-6x+7)(x^4-12x^3-46x^2-84x-47)$ | $[K_3,L_2]$ | $-2^{60}3^{22}$ | $2^{20}$ | 1 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | $3^2$ $(*)$ |
| 234 | $-(x^2-2x-1)(x^4-4x^3-30x^2+4x+97)$ | $[K_3,L_4]$ | $2^{60}$ | $2^{20}$ | 0 | $\mathbb{Z}/2$ | $0_{\mathrm{LS}}$ | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | 1 |
| | $3(2x^2+4x+1)(4x^4+16x^3-76x^2+104x-47)$ | $[K_3,L_2]$ | $-2^{60}3^{22}$ | $2^{20}$ | 0 | $\mathbb{Z}/2$ | 0 | $C_2$ | $C_2$ | $\mathbb{Q}$ | USp(4) | $3^2$ $(*)$ |