TMUA 2021 Paper 2 Question 1

Find the value of

$$\int_1^4 \left(3\sqrt{x} + \frac{4}{x^2}\right) \mathrm{d}x$$

A -0.75

B 7.125

C 11

D 17

E 18

F 21.875

G 34.5

$$= \int_1^4 3x^{-1} + 4x^{-2}\,dx$$

$$= \left[\tfrac{2}{3} \times 3x^{\frac{3}{2}} - 4x^{-1}\right]_1^4$$

$$= \left(2(4)^{\frac{3}{2}} - 4(4)^{-1}\right) - \left(2(1)^{\frac{3}{2}} - 4(1)^{-1}\right)$$

$$= (16-1) - (2-4)$$

$$= 15 - (-2)$$

$$= 17$$

so the correct answer is D