Triangle mosaic

Question:

Select a starting point P_0 and draw a 1cm long line c_1 ending in P_1.

From P_1, make a 1cm line perpendicular to $\overline{P_0P_1}$. Connect its other end point P_2 with P_0 to obtain a triangle and call the hypotenuse c_2.

From P_2, make a 1cm line perpendicular to $\overline{P_0P_2}$ (away from the triangle). Connect its other end point P_3 with P_0 to obtain a triangle and call the hypotenuse c_3.

Keep going. Step k looks like this:

From P_{k-1}, make a 1cm line perpendicular to $\overline{P_0P_{k-1}}$ (away from the previous triangle). Connect its other end point P_k with P_0 to obtain a triangle and call the hypotenuse c_k.

Denote the angles between c_k and c_{k+1} with α_k for $k = 1, 2, 3, \ldots$

Let c_n be the first line to be more than one complete turn away from the starting line c_1.

What is n? Derive formulas for c_k and α_k for $k = 1, 2, 3, \ldots$

Note: This is an updated version from the one posted on 22.4. (typos removed and missing information added to better explain location of 1cm lines).