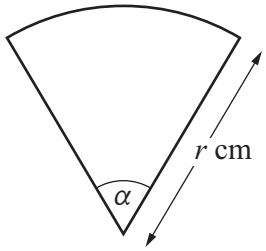
4 The diagram shows a design for a logo. The logo is a sector of a circle, radius r cm, with angle α radians.



The area of the logo is $9\,\text{cm}^2$.

(a) Show that the perimeter, P cm, of the logo is given by

$$P = 2r + \frac{18}{r}.$$ [3]

(b) Given that r can vary, find the stationary value of P and determine its nature. [5]

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5 The tangent to the curve $y = \frac{\sqrt{x+1}}{x}$ at the point where $x = 3$ meets the line $y = x - 16$ at the point A. Find the coordinates of A. [8]

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