

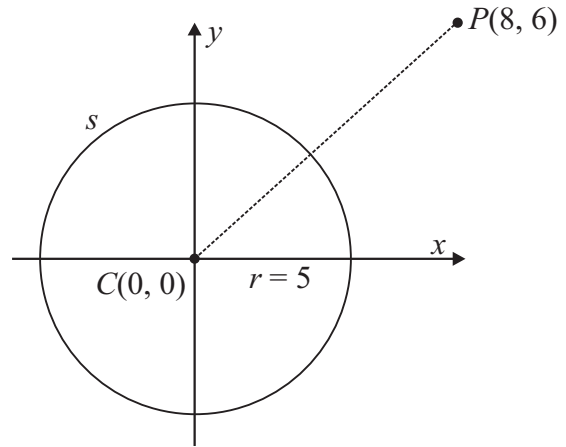
SAMPLE PAPER 2: PAPER 2

QUESTION 2 (25 MARKS)

Question 2 (a)

Circle: $x^2 + y^2 = r^2$
 Centre(0, 0), Radius = r

Circle s : Centre (0, 0), $r = 5$



Question 2 (b)

$$|PQ| = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$C(0, 0), P(8, 6)$

$$|CP| = \sqrt{(8-0)^2 + (6-0)^2} = \sqrt{64+36} = \sqrt{100} = 10$$

Question 2 (c)

Triangles PCF and PCE are congruent right-angled triangles. The hypotenuse is CP .

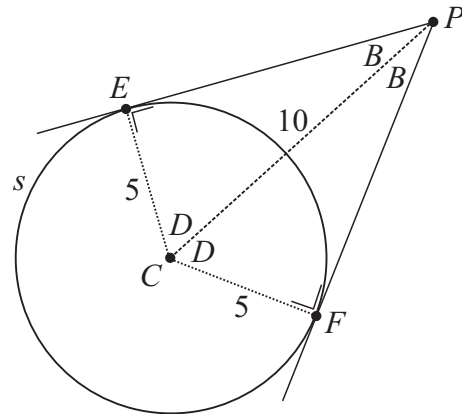
$$\sin A = \frac{\text{Opposite}}{\text{Hypotenuse}}$$

$$\sin B = \frac{5}{10} = \frac{1}{2} \Rightarrow B = \sin^{-1}\left(\frac{1}{2}\right) = 30^\circ$$

$$\angle B + \angle D + 90^\circ = 180^\circ$$

$$30^\circ + \angle D = 90^\circ$$

$$\therefore \angle D = 60^\circ$$



Question 2 (d)

$$r = 6400 \text{ km}, \theta = 2(\angle D) = 120^\circ$$

$$l = 2\pi(6400) \left(\frac{120^\circ}{360^\circ} \right) = 13404 \text{ km}$$

$$l = 2\pi r \left(\frac{\theta}{360^\circ} \right)$$

$$|CP| = 2r \Rightarrow h = r$$

Height $h = 6400 \text{ km}$