



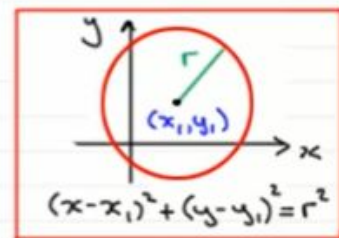
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## Circle | Past Paper Question | C1 OCR June 2012 Q10(i-iii)

A circle has equation  $(x-5)^2 + (y+2)^2 = 25$ .

- Find the coordinates of the centre  $C$  and the length of the diameter.
- Find the equation of the line which passes through  $C$  and the point  $P(7, 2)$ .
- Calculate the length of  $CP$  and hence determine whether  $P$  lies inside or outside the circle.



i) centre  $C(5, -2)$

$$\therefore \text{radius} = \sqrt{25} \\ = 5$$

$$\therefore \text{diameter} = 10$$

ii) gradient  $m = \frac{2 - (-2)}{7 - 5} \\ = 2$

$\therefore$  Equation of the line is:

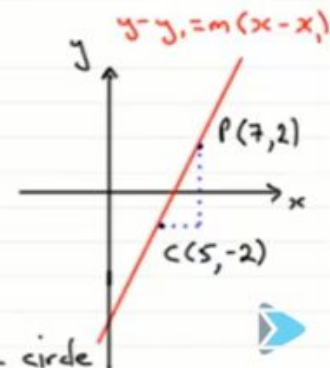
$$y - 2 = 2(x - 7)$$

$$\therefore y - 2 = 2x - 14$$

$$\therefore y = 2x - 12$$

iii)  $CP = \sqrt{(7-5)^2 + (2-(-2))^2} \\ = \sqrt{20} \\ = 2\sqrt{5}$

Since  $CP < 5$  then  $P$  lies inside circle



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