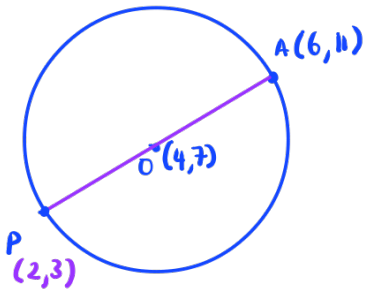
1 The centre O of a circle has coordinates (4, 7)

The point A, on the circle, has coordinates (6, 11) and AOP is a diameter of the circle.

Find an equation of the tangent to the circle at the point P



O is the midpoint of PA

Finding coordinates of P :

x-coordinate : $\frac{6+x}{2} = 4$

$x = 2$

y-coordinate : $\frac{11+y}{2} = 7$

$y = 3$

$P = (2,3)$ (1)

Finding gradient of AOP :

$M = \frac{11-3}{6-2} = \frac{8}{4} = 2$ (1)

Finding gradient of tangent to AOP :

$m = \frac{-1}{2} = -\frac{1}{2}$ (1)

Equation of tangent at P :

$3 = -\frac{1}{2}(2) + c$

$c = 4$

$y = -\frac{1}{2}x + 4$ (1)

$y = -\frac{1}{2}x + 4$

(Total for Question 1 is 4 marks)