

Differentiation – A2 Mathematics P1

1. June/2022/Paper_7357/01/No.5

Find an equation of the tangent to the curve

$$y = (x - 2)^4$$

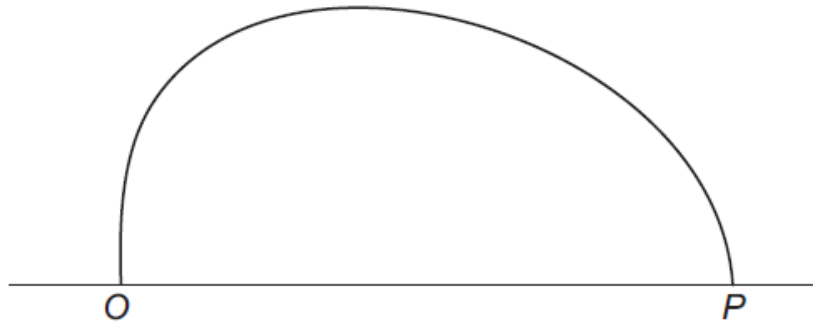
at the point where $x = 0$ **[3 marks]**

2. June/2022/Paper_7357/01/No.13

Figure 2 shows the approximate shape of the vertical cross section of the entrance to a cave. The cave has a horizontal floor.

The entrance to the cave joins the floor at the points O and P .

Figure 2



Garry models the shape of the cross section of the entrance to the cave using the equation

$$x^2 + y^2 = a\sqrt{x} - y$$

where a is a constant, and x and y are the horizontal and vertical distances respectively, in metres, measured from O .

- (a) The distance OP is 16 metres.

Find the value of a that Garry should use in the model.

[2 marks]

(c) Suggest one limitation of the model Garry has used.

[1 mark]
