



The circle $x^2 + y^2 = 25$ has tangents at the points A and B. $r = 5$

The point A has coordinates (0, 5)

The point B has coordinates (3, -4)

The tangents meet at the point P.

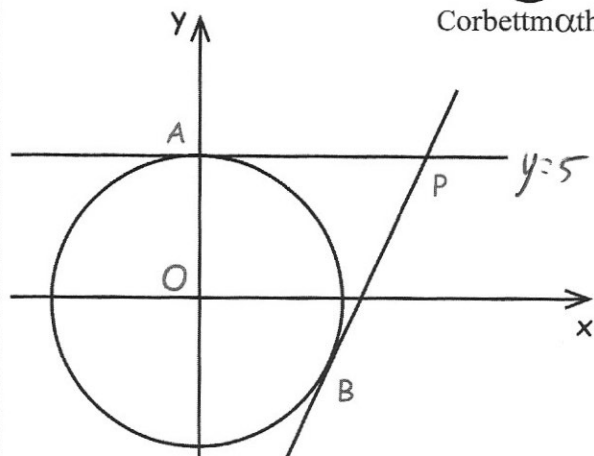
Work out the coordinates of the point P.

gradient of OB is $-\frac{4}{3}$

$$y = \frac{3}{4}x + c$$

$$-4 = \frac{9}{4} + c$$

$$c = -\frac{25}{4}$$



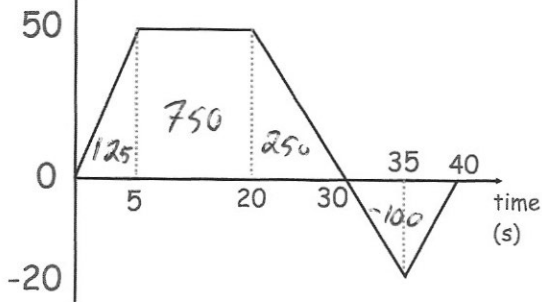
$$y = \frac{3}{4}x - \frac{25}{4}$$

$$5 = \frac{3}{4}x - \frac{25}{4}$$

$$\frac{3}{4}x = 11\frac{1}{4} \quad x = 15$$

(15, 5)

Water flow
(cm³/s)



The graph above shows information on how an empty container is being filled with water.

What happens between 30 and 40 seconds?

Water is poured out

How much water is in the container after 40 seconds?

$$125 + 750 + 250 - 100$$

$$= 1025 \text{ cm}^3$$

The first five terms of a quadratic sequence are:

30 36 46 60 78

6 10 14 18

4 4 4

$$a = 2$$

$$b = 0$$

$$c = 28$$

Work out the nth term

$$2n^2 + 28$$