

9.

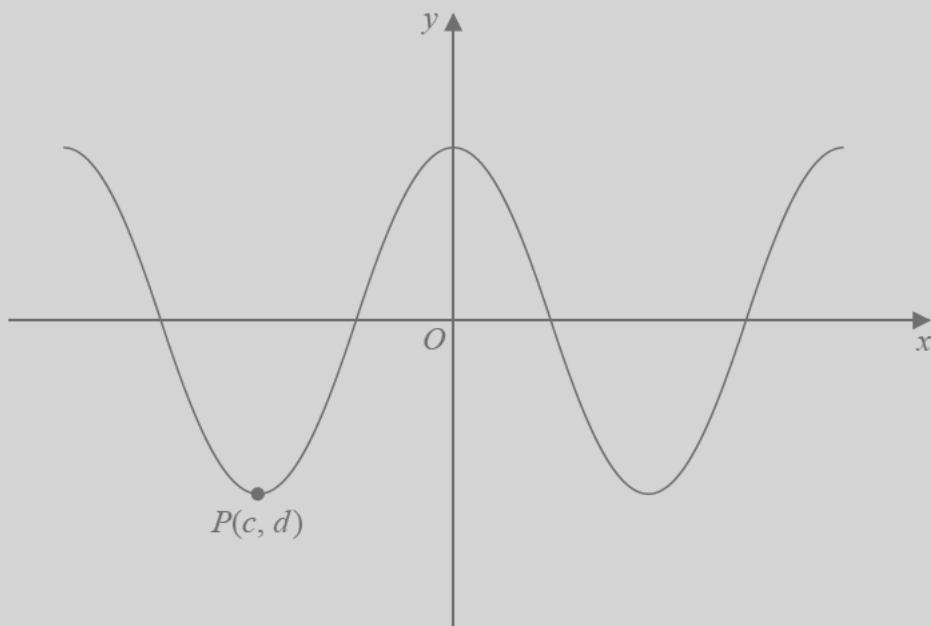


Figure 3

Figure 3 shows part of the curve with equation  $y = 3 \cos x^\circ$ .

The point  $P(c, d)$  is a minimum point on the curve with  $c$  being the smallest negative value of  $x$  at which a minimum occurs.

(a) State the value of  $c$  and the value of  $d$ .

(1)

(b) State the coordinates of the point to which  $P$  is mapped by the transformation which transforms the curve with equation  $y = 3 \cos x^\circ$  to the curve with equation

(i)  $y = 3 \cos \left( \frac{x^\circ}{4} \right)$

(ii)  $y = 3 \cos(x - 36)^\circ$

(2)

(c) Solve, for  $450^\circ \leq \theta < 720^\circ$ ,

$$3 \cos \theta = 8 \tan \theta$$

giving your solution to one decimal place.

**In part (c) you must show all stages of your working.**

**Solutions relying entirely on calculator technology are not acceptable.**

(5)