

11.

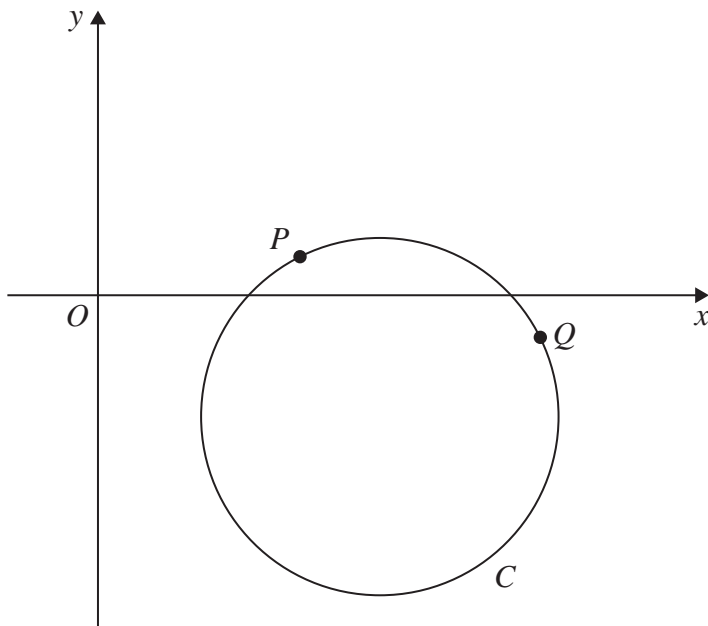


Figure 5

Figure 5 shows a sketch of a circle C .

The point $P(5, 1)$ and the point $Q(11, -1)$ lie on C as shown in Figure 5.

(a) Find the equation of the perpendicular bisector of PQ .

Give your answer in the form $y = mx + c$ where m and c are constants.

(3)

The point R also lies on C .

Given that the perpendicular bisector of PR has equation $y = -\frac{1}{2}x + \frac{1}{2}$

(b) show that the centre of C is at $(7, -3)$

(3)

(c) Hence find an equation for C .

(2)

(d) Use algebra to find the coordinates of R .

You must show your working.

(5)