10.

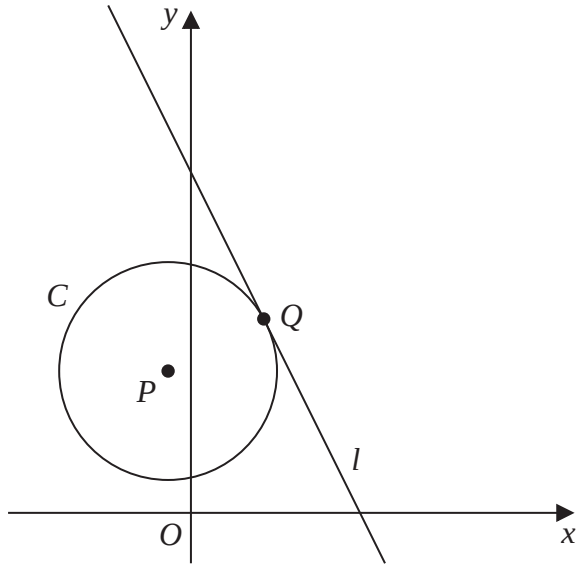

Figure 4

Figure 4 shows a sketch of the circle C

- the point P $(-1, k + 8)$ is the centre of C
- the point Q $(3, k^2 - 2k)$ lies on C
- k is a positive constant
- the line l is the tangent to C at Q

Given that the gradient of l is -2

(a) show that

$$k^2 - 3k - 10 = 0$$

(4)

(b) Hence find an equation for C

(4)