9 The line l_1 with equation $y + 2x - 4 = 0$ passes through the point P with coordinates $(a, 6)$ and the point Q with coordinates $(3, b)$.

(a) Find the value of a and the value of b.

(2)

The line l_2 passes through point P and is perpendicular to l_1

The point R, with coordinates (e, f) lies on l_2 such that $PR = 6\sqrt{5}$

(b) Find the two possible pairs of values of e and f.

(8)

Given that $e < 0$,

(c) find the area of triangle PQR.

(3)

The points P, Q and R lie on a circle C.

(d) Find the coordinates of the centre of C.

(2)

Question 9 continued

Question 9 continued

Question 9 continued

(Total for Question 9 is 15 marks)