5 In triangle ABC, $AB = x$ cm, $BC = (4x - 5)$ cm, $AC = (2x + 3)$ cm and angle $ABC = 60°$.

Find, to 3 significant figures,

(a) the value of x,

(5)

(b) the area of triangle ABC.

(3)

Question 5 continued

(Total for Question 5 is 8 marks)

6 $f(x) = (p + qx)^6$ where $p \neq 0$ and $q \neq 0$

(a) Find the expansion of $f(x)$ in ascending powers of x up to and including the term in x^4, simplifying each term as far as possible.

(3)

In the expansion of $f(x)$, 4 times the coefficient of x^4 is equal to 9 times the coefficient of x^2

Given that $(p + q) > 0$ and $f(1) = 15\,625$

(b) find the possible pairs of values of p and q.

(6)

Question 6 continued

(Total for Question 6 is 9 marks)