

Answer all ELEVEN questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1

$$f(x) = (x - 3)[x^2 + (p - 2)x + q]$$

Given that $f(0) = -12$

(a) find the value of q .

(2)

(b) Find the range of values of p for which the cubic equation $f(x) = 0$ has only one real root.

(5)

(Total for Question 1 is 7 marks)

