$f(x) = 2x^3 + ax^2 - 14x + b$ where a and b are constants. 5

When f (x) is divided by (x-4) the remainder is 39

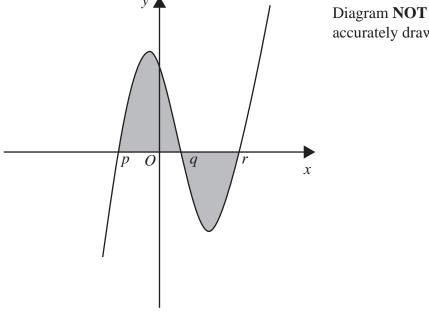
Given that (x-1) is a factor of f(x)

(a) show that a = -3 and find the value of b

(5)

(b) Hence factorise f(x) completely.

(4)



accurately drawn

Figure 3

Figure 3 shows part of the curve C with equation y = f(x)

Given that C crosses the x-axis at the points with coordinates (p, 0), (q, 0) and (r, 0)

(c) write down the value of p, the value of q and the value of r

(3)

The region shown shaded in Figure 3 is bounded by the curve and the *x*-axis.

(d) Use algebraic integration to find the exact area of the shaded region.

(4)

Oraștian 5 continued
Question 5 continued



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Question 5 continued
(Total for Question 5 is 16 marks)

