

2

$$f(x) = x^3 + px + q \quad \text{where } p \text{ and } q \text{ are constants.}$$

The remainder when  $f(x)$  is divided by  $(x - 1)$  is  $-12$

The remainder when  $f(x)$  is divided by  $(x - 4)$  is  $30$

(a) Find the value of  $p$  and the value of  $q$ . (6)

Using your values of  $p$  and  $q$

(b) show that  $f(3) = 0$  (1)

(c) Express  $f(x)$  as a product of linear factors. (3)

(d) Hence solve the equation  $f(x) = 0$  (1)

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## Question 2 continued

Handwriting practice area with horizontal dotted lines.

(Total for Question 2 is 11 marks)

