

11 $(x + 3)$ is a factor of $3x^3 + kx^2 - 27x + 36$ where k is a constant.

(a) Show that $k = -4$

(2)

(b) Show that $3x^3 - 4x^2 - 27x + 36 = 0$ can be written in the form

$$\frac{27}{x} - \frac{36}{x^2} = px + q$$

where p and q are integers, giving the value of p and the value of q .

(3)

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Question 11 continued

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Question 11 continued

$$y = \frac{27}{x} - \frac{36}{x^2}$$

- (c) Complete the table of values for $y = \frac{27}{x} - \frac{36}{x^2}$

Give your values of y to 1 decimal place where necessary.

x	1	1.25	1.5	2	3	4	5	6
y	-9		2			4.5	4.0	3.5

(3)

- (d) On the grid, plot the points from your completed table and join them to form a smooth curve.

(3)

- (e) For your value of p and your value of q found in part (b), draw on the same grid the straight line with equation $y = px + q$

(2)

- (f) Hence find the **three** solutions of $3x^3 - 4x^2 - 27x + 36 = 0$

(3)



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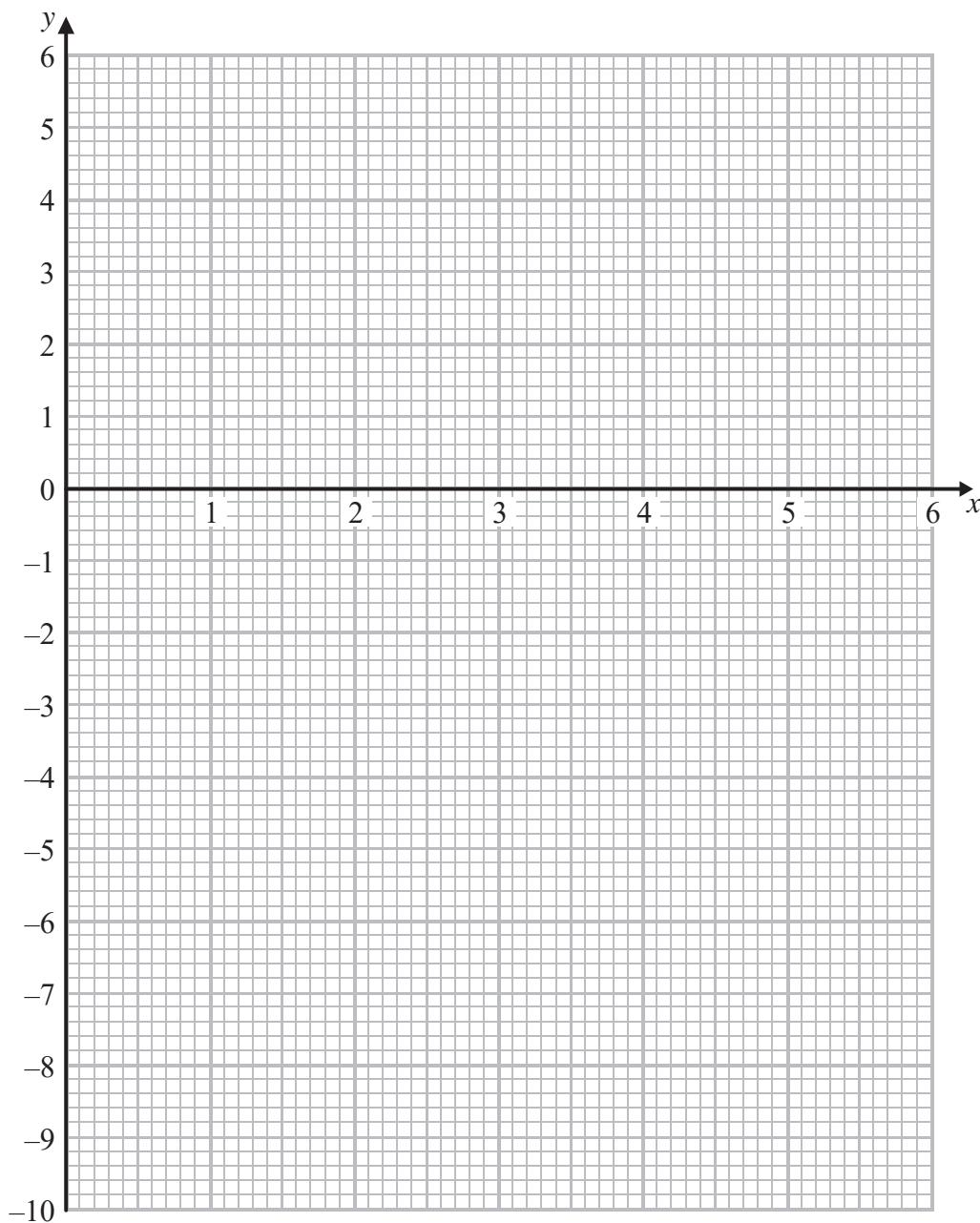
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Question 11 continued

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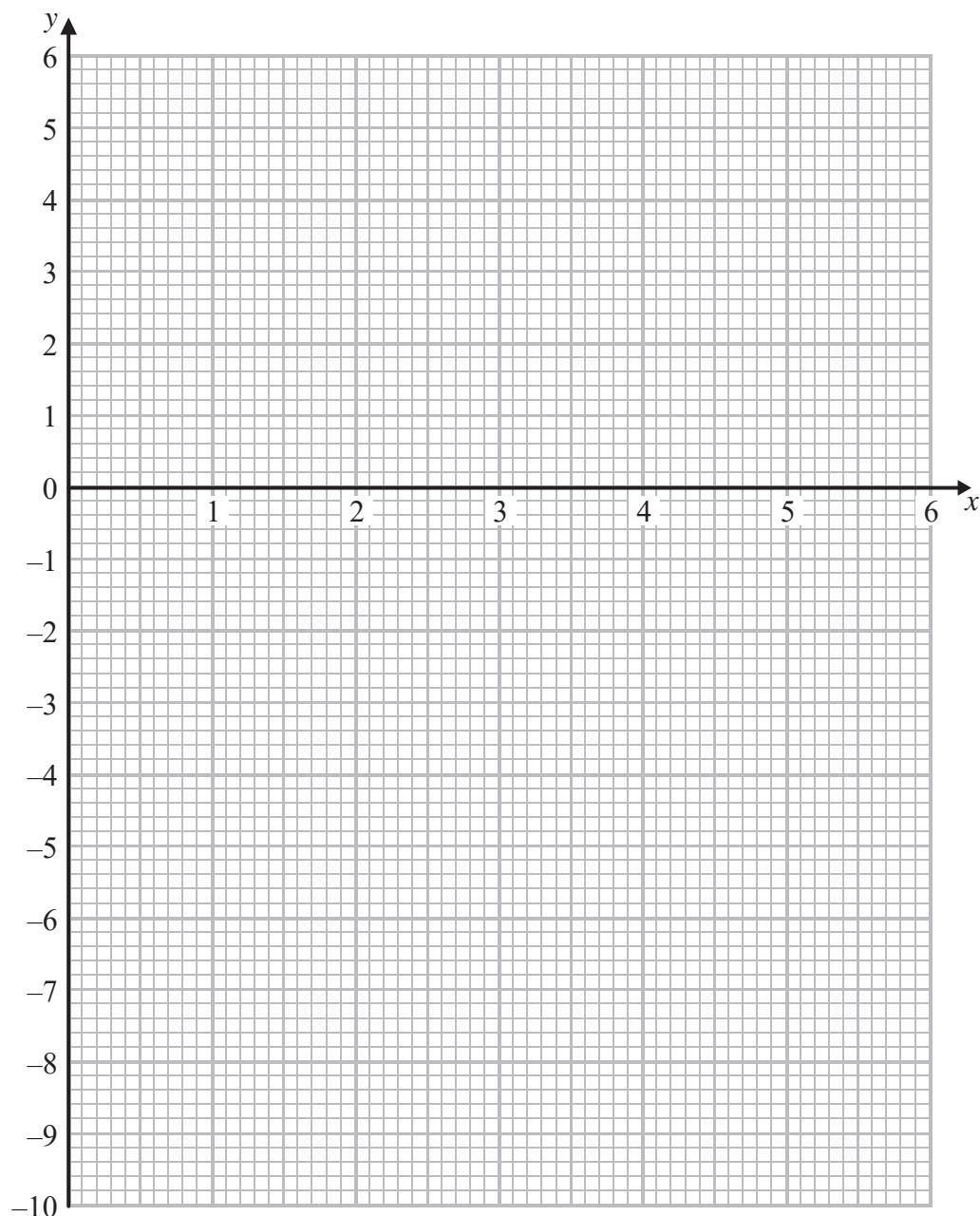


Turn over for a spare grid if you need to redraw your graph.



Question 11 continued

Only use this grid if you need to redraw your graph.



(Total for Question 11 is 16 marks)

TOTAL FOR PAPER IS 100 MARKS

