

- 11 (a) Complete the table of values for $y = e^{(x-1)} + 2$

Give your answers to 2 decimal places where appropriate.

x	-2	-1	0	1	2	3
$f(x)$	2.05				4.72	9.39

(2)

- (b) On the grid opposite, draw the graph of $y = e^{(x-1)} + 2$ for $-2 \leq x \leq 3$

(2)

- (c) Use your graph to obtain an estimate, to 1 decimal place, of the root of the equation $4 = e^{(x-1)}$ in the interval $-2 \leq x \leq 3$

(2)

- (d) By drawing a straight line on the grid, obtain an estimate, to 1 decimal place, of the root of the equation $\ln(4x - 4) = x - 1$ in the interval $-2 \leq x \leq 3$

(5)

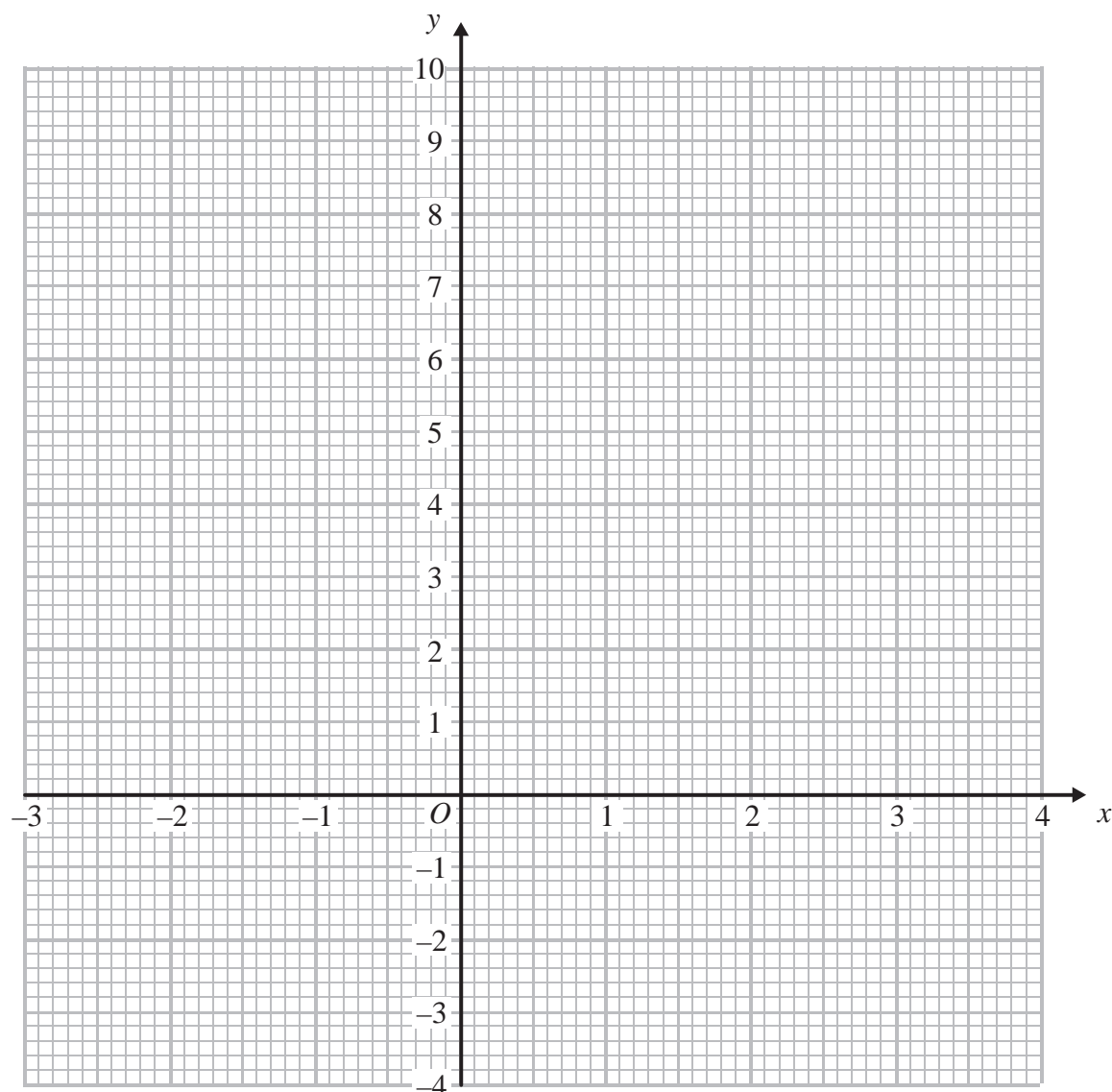
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Question 11 continued



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



Question 11 continued

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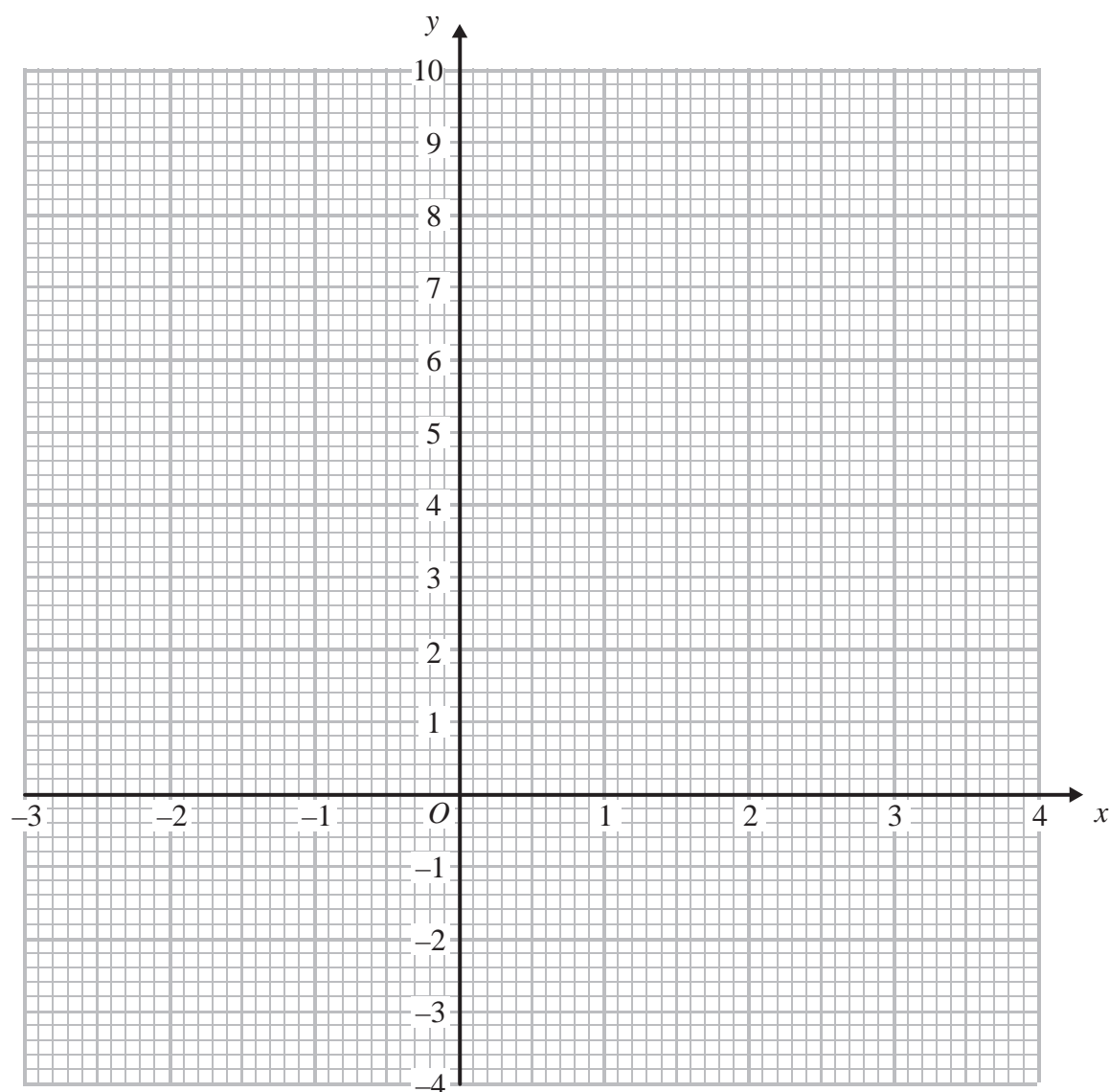
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Question 11 continued

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



(Total for Question 11 is 11 marks)



12

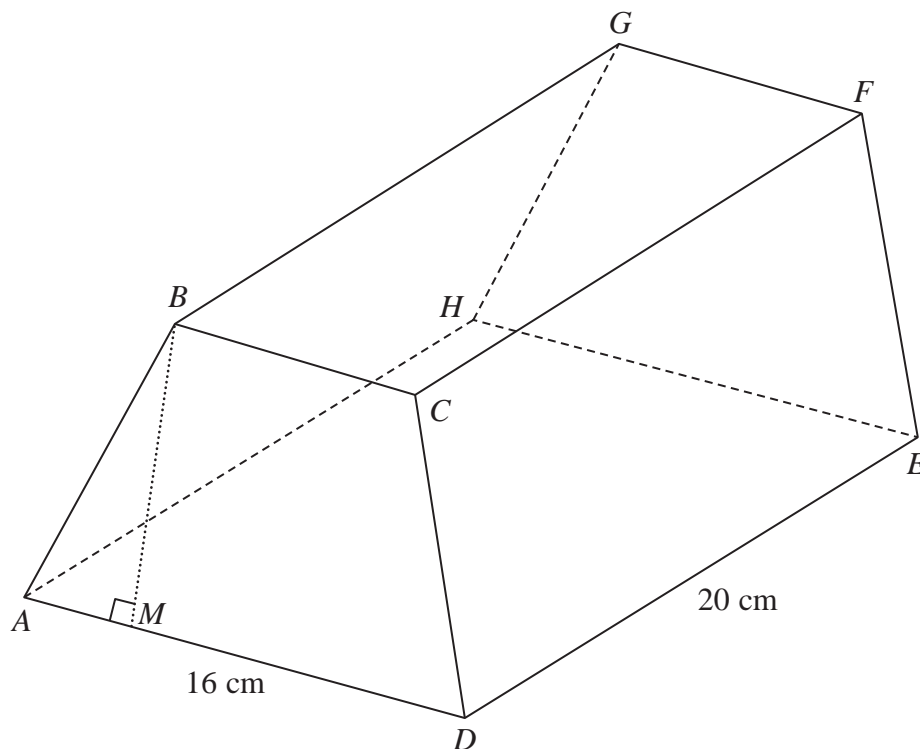
Diagram **NOT**
accurately drawn**Figure 3**

Figure 3 shows a right prism $ABCDEFGH$. The cross section $ABCD$ of the prism is a trapezium with $AB = DC$. The point M lies on AD and BM is perpendicular to AD .

$$AB = 8 \text{ cm} \quad CD = 8 \text{ cm} \quad BC = 8 \text{ cm} \quad AD = 16 \text{ cm} \quad DE = 20 \text{ cm}$$

Given that $BM = p\sqrt{q}$ cm where q is a prime number,

(a) find the value of p and the value of q . (3)

(b) Find the size of angle BAM in degrees. (2)

Find, in degrees to the nearest 0.1°

(c) the size of the angle between EB and the plane $ADEH$, (4)

(d) the size of the angle between the plane $BCEH$ and the plane $ADEH$. (3)



Question 12 continued

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Question 12 continued

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Question 12 continued

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(Total for Question 12 is 12 marks)**TOTAL FOR PAPER IS 100 MARKS**