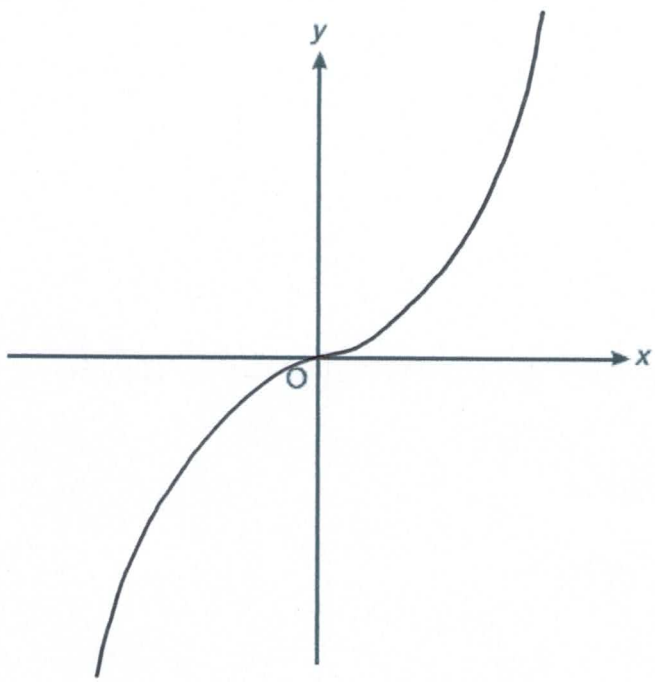
JustMaths

Quadratic & Cubic Graphs (H)

A collection of 9-1 Maths GCSE Sample and Specimen questions from AQA, OCR, Pearson-Edexcel and WJEC Eduqas.

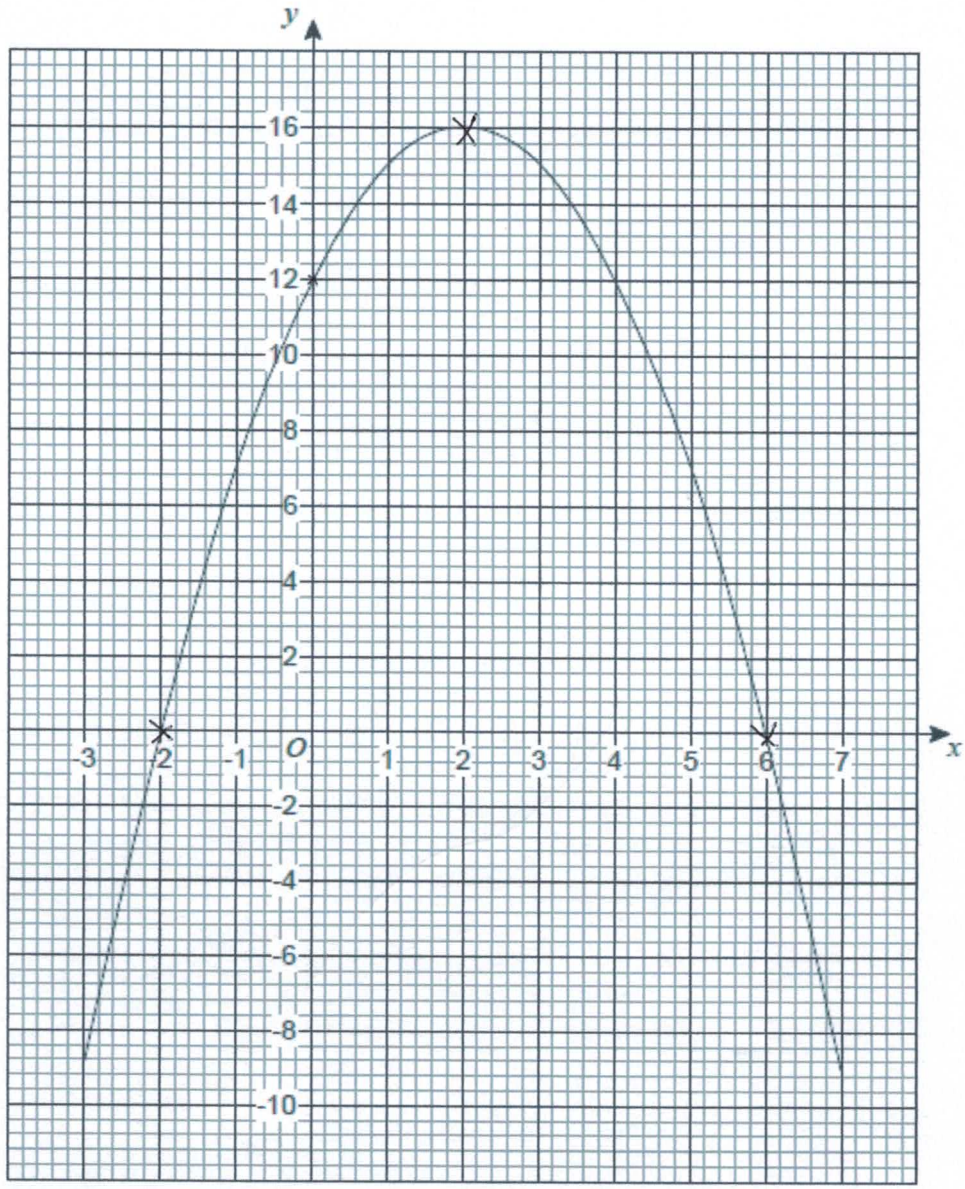
Name:	Glyn Brown
Total Marks:	

1. Sketch a graph on the axes below that shows $y = x^3$.



[2]

2. The graph $y = a + bx - x^2$ is shown.



(a) Circle the coordinates of the turning point of the curve.

(-2, 0) (0, 12) (2, 16) (6, 0)

[1]

(b) Circle the value of a.

[1]

-2 12 16 6

(c) Circle the two roots of $a + bx - x^2 = 0$

-2 and 6 2 and -6 2 and 6 -2 and -6

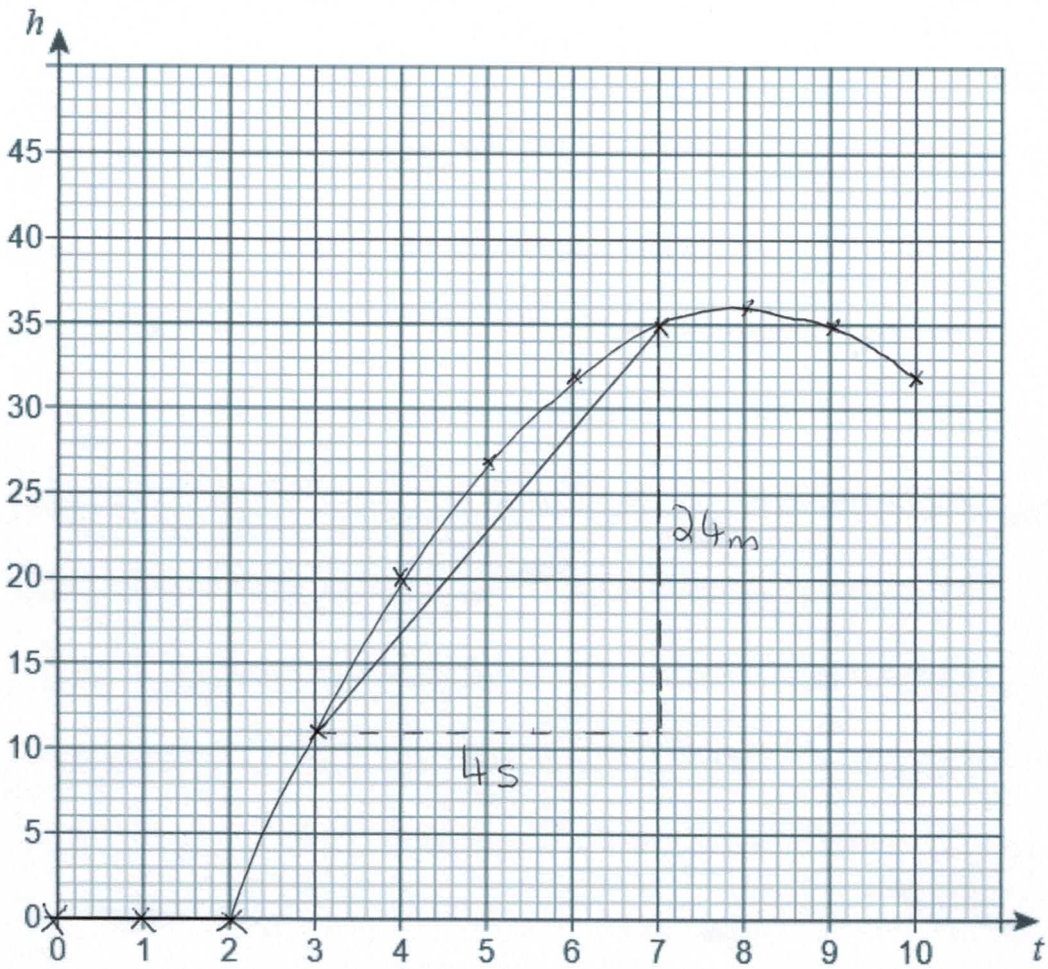
[1]

3. The height, h metres, of a particle at time, t seconds, is given by the function

$h = 0 \qquad 0 \leqslant t < 2$

$h = (14 - t)(t - 2) \qquad 2 \leqslant t \leqslant 10$

a) Draw a graph to show the height of the particle in the first 10 seconds.



$t = 3$ $h = 11 \times 1 = 11$ $t = 7$ $h = 7 \times 5 = 35$

$t = 4$ $h = 10 \times 2 = 20$ $t = 8$ $h = 6 \times 6 = 36$

$t = 5$ $h = 9 \times 3 = 27$ $t = 9$ $h = 5 \times 7 = 35$

$t = 6$ $h = 8 \times 4 = 32$ $t = 10$ $h = 4 \times 8 = 32$

[3]

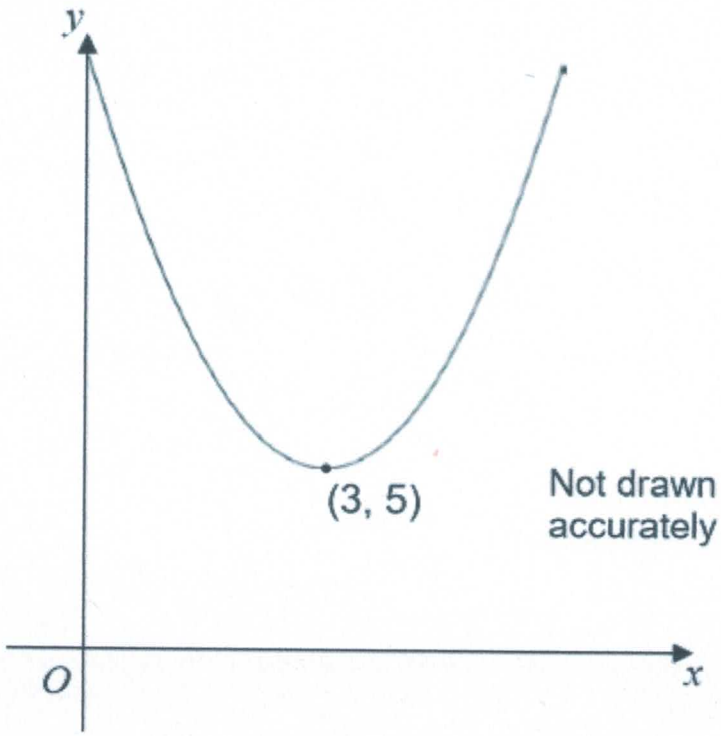
b) By joining the points on the graph where t = 3 and t = 7 with a straight line, work out the average rate of change of height between 3 and 7 seconds.

$$\text{Rate of change} = \frac{35 - 11}{7 - 3} = \frac{24}{4}$$

$$= 6 \text{ m/s}$$

[2]

4. A sketch of $y = x^2 + cx + d$ is shown.



The turning point is (3, 5)

Work out the values of c and d.

[3]

$y = (x-3)^2 + 5$

$= x^2 - 6x + 9 + 5$

$= x^2 - 6x + 14$

$c = -6$

$d = 14$