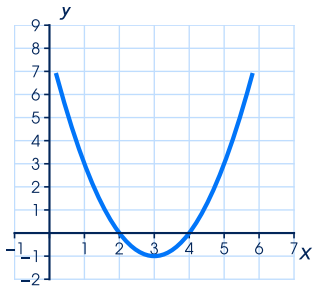
GCSE HIGHER · REVISION MAT 3

Recognising and sketching graphs

1 Complete the table for $y = x^2 + x$.

x	−3	−2	−1	0	1	2
y						

2 The graph of $y = x^2 - 6x + 8$ is shown.

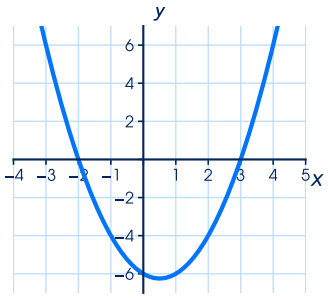


Write down the roots and the y-intercept.

3 Is the point (3, 10) on the curve $y = x^2 + 1$?

Show how you know.

4 The graph of $y = x^2 - x - 6$ is shown.



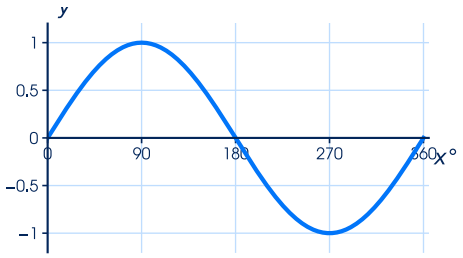
Estimate the solutions of $x^2 - x - 6 = -2$.

5 Factorise $x^3 - x$.

Hence write down where $y = x^3 - x$ crosses the x-axis.

6 Use the graph of $y = \sin x$ to solve

$\sin x = -0.5$ for $0° \leq x \leq 360°$



7 Which of these graphs has the x-axis as an asymptote and passes through (0, 1)?

$$y = \frac{1}{x} \quad y = 2^x \quad y = x^2 + 1$$

Explain.

8 A population is $P = 200 \times 1.5^t$, where t is in years.

Find P when $t = 2$.

After how many whole years does P first exceed 1000?

Mr&Mrs MATHS

ANSWERS · REVISION MAT 3

Recognising and sketching graphs

1 **y: 6, 2, 0, 0, 2, 6**

2 **Roots $x = 2$ and $x = 4$; y-intercept (0, 8)**

3 $3^2 + 1 = 10$

Yes

4 Draw $y = -2$.

$x \approx -1.6$ and $x \approx 2.6$

5 $x(x - 1)(x + 1)$

(−1, 0), (0, 0) and (1, 0)

6 $\sin 30° = 0.5$

$x = 210°$ and $330°$

7 $\frac{1}{x}$ is undefined at 0;

$x^2 + 1$ has no asymptote.

$y = 2^x$

8 $t = 2$: 450

$t = 3$: 675; $t = 4$: 1012.5

450; after 4 years

Mr&Mrs MATHS