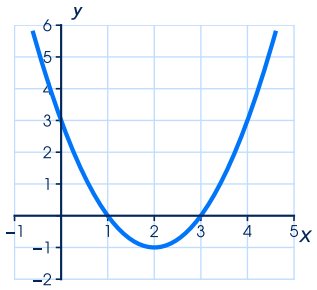
GCSE HIGHER · REVISION MAT 1

Recognising and sketching graphs

1 Complete the table for $y = x^2 - 3$.

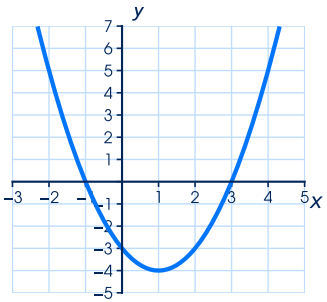
x	−2	−1	0	1	2
y					

2 Write down the turning point of $y = x^2 - 4x + 3$.



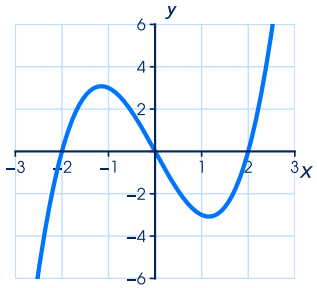
3 Explain why the graph of $y = \frac{1}{x}$ never crosses either axis.

4 The graph of $y = x^2 - 2x - 3$ is shown.



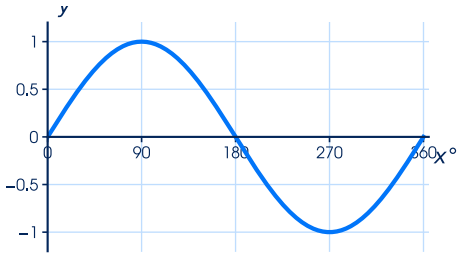
Use it to solve $x^2 - 2x - 3 = 2$.

5 This is the graph of $y = x^3 - 4x$.



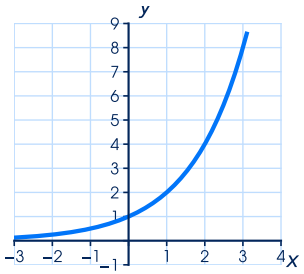
Explain why it cannot be $y = 4x - x^3$.

6 The graph of $y = \sin x$ is shown.



How many solutions does $\sin x = 0.4$ have for $0 \leq x \leq 360$?

7 The graph of $y = 2^x$ is shown.



Explain why y is never negative.

8 The graph of $y = ab^x$ passes through (0, 3) and (2, 48).

b is positive.

Find a and b.

ANSWERS · REVISION MAT 1

Recognising and sketching graphs

1 **y: 1, −2, −3, −2, 1**

2 **(2, −1)**

3 $x = 0$ gives no value of y.

$\frac{1}{x}$ can never equal 0.

So it never meets the y-axis or the x-axis.

4 Draw the line $y = 2$.

$x \approx -1.4$ and $x \approx 3.4$

5 For large positive x, $x^3 - 4x$ is positive.

$4x - x^3$ would be negative there.

The graph rises on the right, so it is $x^3 - 4x$.

6 The line $y = 0.4$ crosses the curve twice.

2 solutions

7 Any power of 2 is positive,

e.g. $2^{-3} = \frac{1}{8}$.

The curve approaches 0 but never reaches it.

8 $x = 0$: $a = 3$

$3b^2 = 48 \Rightarrow b^2 = 16$

$a = 3$, $b = 4$

Mr&Mrs MATHS