GCSE HIGHER · REVISION MAT 5

Transforming graphs

1 $y = f(x)$ has a turning point at $(5, -1)$.

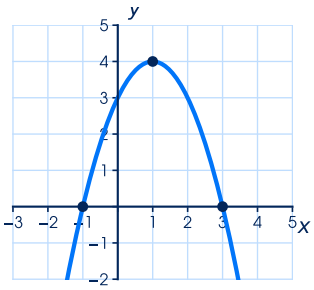
Write down the turning point of $y = f(x) + 3$.

2 $y = f(x)$ has a turning point at $(5, -1)$.

Write down the turning point of $y = f(x - 4)$.

3 Describe the transformation that maps $y = x^3$ onto $y = x^3 + 2$.

4 The graph of $y = f(x)$ is shown.



Find the roots of $y = f(x + 2)$.

5 Sam says $y = -f(x)$ and $y = f(-x)$ are always different graphs.

Give a function that shows he is wrong.

6 $y = \sin x$ is translated by $(0, -1)$.

Write down the maximum and minimum values.

How many times does it meet the x-axis for $0° \leq x \leq 360°$?

7 Show that $y = x^2 + 6x + 7$ is the image of $y = x^2$ after a translation by $(-3, -2)$.

8 $y = (x - 1)(x - 5)$ is translated by $(a, 0)$ so that one root is at the origin.

Find the two possible values of a.

Mr&Mrs MATHS

ANSWERS · REVISION MAT 5

Transforming graphs

1 **(5, 2)**

2 **(9, –1)**

3 **Translation by vector (0, 2)**

4 Roots move 2 to the left

***x* = –3 and *x* = 1**

5 e.g. $f(x) = x$:

$-f(x) = -x$ and $f(-x) = -x$

***f*(*x*) = *x* (or x^3)**

6 **Max 0, min –2**

Once (it touches at 90°)

7 $(x + 3)^2 - 2$

$= x^2 + 6x + 7$

8 Move root 1 to 0: $a = -1$

Move root 5 to 0: $a = -5$

***a* = –1 or *a* = –5**

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