GCSE HIGHER · REVISION MAT 4

Transforming graphs

1 $(-3, 2)$ lies on $y = f(x)$.

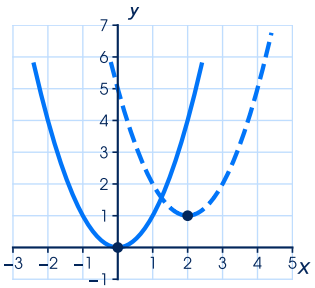
Write down the image on $y = f(x) + 5$.

2 $(-3, 2)$ lies on $y = f(x)$.

Write down the image on $y = -f(x)$.

3 Describe the transformation that maps $y = f(x)$ onto $y = f(x) + 3$.

4 The dashed graph is a translation of $y = f(x)$.



Write its equation in terms of f.

5 $y = \cos x$ is translated by $(-90°, 0)$.

Show that $(90°, -1)$ lies on the image.

6 $f(x) = x^2 - 4$

Find the roots of $y = f(x + 1)$.

7 Explain why $y = f(x)$ and $y = f(x) - 3$ have turning points with the same x-coordinate.

8 $f(x) = x^3 - x$

Show that $y = f(-x)$ is $y = x - x^3$.

Explain why this is the same as $y = -f(x)$.

Mr&Mrs MATHS

ANSWERS · REVISION MAT 4

Transforming graphs

1 **(−3, 7)**

2 **(−3, −2)**

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

4 Turning point moves (0, 0) → (2, 1)

***y* = *f*(*x* − 2) + 1**

5 Image: $y = \cos(x + 90°)$

cos 180° = −1 ✓

6 $(x + 1)^2 - 4 = 0$

$x + 1 = \pm 2$

***x* = 1 or *x* = −3**

7 **The graph moves straight down 3, so nothing moves sideways.**

8 $(-x)^3 - (-x) = -x^3 + x$

$-f(x) = -(x^3 - x) = x - x^3$ too