GCSE HIGHER · REVISION MAT 4

Functions

1 $g(x) = x^2 + 3x$

Find $g(2)$.

2 $f(x) = \sqrt{x + 7}$

Find $f(9)$.

3 $f(x) = 4x - 1$

Explain why $f(x)$ is odd for every integer x.

4 $f(x) = 2x + 3$ and $g(x) = 5x - 9$

Find x when $f(x) = g(x)$.

5 $f(x) = x^2$ and $g(x) = x - 4$

Show that $fg(x) - gf(x) = 20 - 8x$.

6 $f(x) = \frac{3}{x}$

Show that $f^{-1}(x) = f(x)$.

7 $f(x) = \frac{x}{x + 2}$

Find $f^{-1}(x)$.

8 $f(x) = x^2 - 4x$ and $g(x) = x + 2$

Solve $gf(x) = 7$.

Mr&Mrs MATHS

ANSWERS · REVISION MAT 4

Functions

1 **10**

2 $\sqrt{16}$

4

3 $4x$ is always even.

Even – 1 is odd.

4 $2x + 3 = 5x - 9$

$x = 4$

5 $(x - 4)^2 - (x^2 - 4)$

$= x^2 - 8x + 16 - x^2 + 4$

$= 20 - 8x$

6 $y = \frac{3}{x} \Rightarrow x = \frac{3}{y}$

$f^{-1}(x) = \frac{3}{x} = f(x)$

7 $x = \frac{y}{y+2} \Rightarrow xy + 2x = y$

$y(x - 1) = -2x$

$f^{-1}(x) = \frac{2x}{1-x}$

8 $x^2 - 4x + 2 = 7$

$x^2 - 4x - 5 = 0$

$x = 5$ or $x = -1$

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