

Inverse Functions

For AQA GCSE Mathematics (8300) • Higher tier

Name _____

Total marks: **30**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

1 Find the inverse function of each of these.

(a) $f(x) = 5x - 3$

[2 marks]

Answer $f^{-1}(x) =$ _____

(b) $g(x) = \frac{x}{4} + 7$

[2 marks]

Answer $g^{-1}(x) =$ _____

(c) $k(x) = \sqrt[3]{x} + 2$

[2 marks]

Answer $k^{-1}(x) =$ _____

2 $f(x) = \sqrt{x+5}$
Work out $f^{-1}(4)$

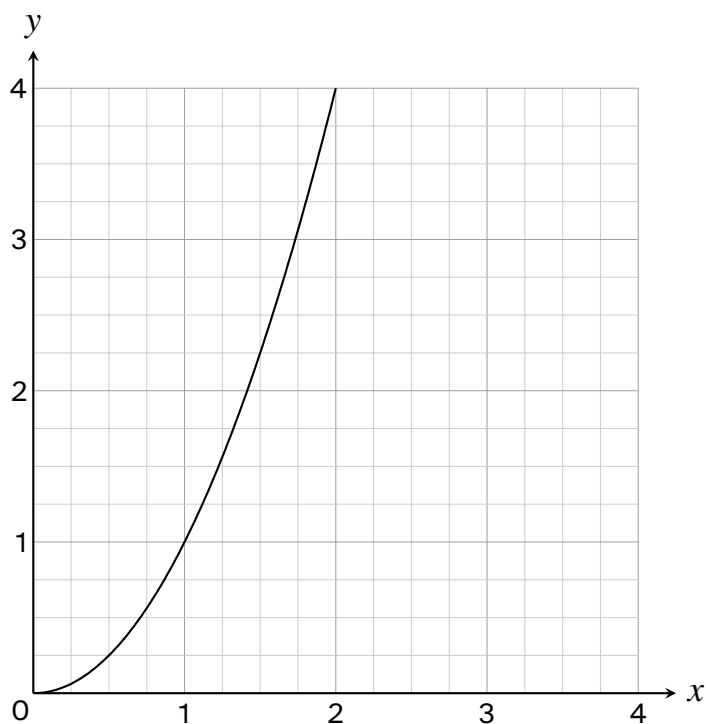
[2 marks]

Answer _____

3 $f(x) = x^2$ for $x \geq 0$

The graph of $y = f(x)$ for $0 \leq x \leq 2$ is drawn on the grid.

On the same grid, draw the graph of $y = f^{-1}(x)$ for $0 \leq x \leq 4$



[2 marks]

4 $f(x) = \frac{3x+2}{x-3}$

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

[4 marks]

- 5 $f(x) = 3x + 2$
Solve $f(x) = f^{-1}(x)$

[3 marks]

Answer _____

- 6 $f(x) = \frac{x+4}{3}$ and $g(x) = x^2 - 2$

(a) Work out $gf(5)$

[2 marks]

Answer _____

(b) Jo says,

$$‘f(5) = 3, \text{ so } f^{-1}(5) = \frac{1}{3},’$$

Is Jo correct?

You must show your working.

[2 marks]

Answer _____

- 7** $f(x) = 2x + a$ and $f^{-1}(x) = bx + 3$ where a and b are constants.
Work out the value of a and the value of b .

[4 marks]

Answer _____

- 8** $f(x) = x^2$ $g(x) = 2x - 1$
Solve $gf(x) = g^{-1}(x)$

[5 marks]

Answer _____