

INVERSE  
FUNCTION  
↓

## Inverse Functions

Find the inverse of each function.

$$1) g(x) = \frac{1}{-x+3}$$

$$2) f(x) = \frac{-25+8x}{5}$$

$$y = \frac{-25+8x}{5}$$

$$x = \frac{-25+8y}{5}$$

$$5x = -25+8y$$

$$\begin{aligned} & \rightarrow 5x+25=8y \\ & \boxed{\frac{5x+25}{8}=y} \end{aligned}$$

$$3) h(x) = (x-2)^3$$

$$y = (x-2)^3$$

$$x = (y-2)^3$$

$$\sqrt[3]{x} = y-2$$

$$\sqrt[3]{x} + 2 = y$$

$$5) f(n) = 4 + \frac{1}{5}n$$

$$6) g(x) = -\frac{1}{5}x - 1$$

State if the given functions are inverses.

7)  $f(x) = 2x - 4$

$h(x) = 2 + \frac{1}{2}x$

YES INVERSES

does  $f(h(x)) = h(f(x))$

plug 0 in for x

$f(h(0)) = h(f(0))$

$f(2)$

$2(2) - 4 = 0$  ✓

$h(-4)$

$2 + \frac{1}{2}(-4) = 0$  ✓

9)  $f(x) = x + 2$

$h(x) = x - 2$

8)  $g(x) = 2 + \frac{1}{5}x$

$f(x) = -x + 1$

NOT INVERSES

$y = -x + 1$

$x = -y + 1$

$x - 1 = -y$   
 $\frac{x-1}{-1} = \frac{-y}{-1}$

$-x + 1 = y$

10)  $f(x) = -4x - 16$

$g(x) = -4 - \frac{1}{4}x$

11)  $g(n) = 2n - 4$

$f(n) = 5 + \frac{5}{4}n$

12)  $f(n) = -5n - 20$

$g(n) = 5 - \frac{9}{5}n$

### Answers to Inverse Functions

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

2)  $f^{-1}(x) = \frac{5x + 25}{8}$

3)  $h^{-1}(x) = \sqrt[3]{x} + 2$

4)  $f^{-1}(x) = \frac{3}{7}x - \frac{6}{7}$

5)  $f^{-1}(n) = 5n - 20$

6)  $g^{-1}(x) = -5x - 5$

7) Yes

8) No

9) Yes

10) Yes

11) No

12) No