

DRILL \*  $f^{-1}(x) \Rightarrow$  INVERSE FUNCTION

① What is the inverse of:

$$f(x) = \{(3, -4), (5, 4), (-3, 8)\}$$

$$f^{-1}(x) = \{(-4, 3), (4, 5), (8, -3)\}$$

② Solve:  $\frac{x-4}{2} = 5(2)$

$$\begin{array}{r} x - 4 = 10 \\ + 4 \quad + 4 \\ \hline x = 14 \end{array}$$

$$\boxed{x = 14}$$

## Steps for finding the inverse of a function

\* If the function is written  $f(x) = \dots$  then replace  $f(x)$  with "y".

- 1) Switch (Replace)  $x$  &  $y$
- 2) Solve for "y" (Get "y" by itself)

Ex:  $y = 4x + 12$

$x = 4y + 12$

$x - 12 = 4y + \cancel{12} - \cancel{12}$

$\frac{x-12}{4} = \frac{4y}{4}$

$\frac{x-12}{4} = y$

← Inverse

switch  
x & y

Solve for "y"

Find the inverse of:

$$f(x) = \frac{x-5}{3}$$

Replace  $f(x)$   
with  $y$

$$y = \frac{x-5}{3}$$

Switch  
 $x$  &  $y$

$$3x = \frac{y-5}{3} \cdot 3$$

$$3x+5 = y - \cancel{5} + \cancel{5}$$

$$y = 3x+5$$

Inverse

Find the inverse of:

$$y = -4(x + 3) - 2$$

$$x = -4(y + 3) - 2$$

$$x = -4y - 12 - 2$$

$$x + 14 = -4y - 14 + 14$$

$$\frac{x + 14}{-4} = \frac{-4y}{-4}$$

$$y = \frac{x + 14}{-4}$$

INVERSE

Switch  
x & y

$$y = x^2 + 6$$

Find the  
inverse

$$x = y^2 + 6$$

Switch  $x$  &  $y$

$$x - 6 = y^2 + 6 - 6$$

Solve for  $y$

$$\sqrt{x - 6} = \sqrt{y^2}$$

$$\sqrt{x - 6} = y$$

$$y = \sqrt{x - 6}$$

Inverse