

AM Objective #16: Find inverses of relations

1. Find the inverse of the relation $f = \{(-6, -2), (-2, -6), (-1, -5)\}$.

- [A] $\{(-2, -6), (-6, -2), (-5, -1)\}$ [B] $\{(-6, -2), (-2, -6), (-1, -5)\}$
[C] $\{(-2, -6), (-6, -5), (-5, -1)\}$ [D] $\{(-2, -6), (-6, -1), (-5, -1)\}$

$$\{(-6, -2), (-2, -6), (-1, -5)\}$$

↓ inverses switch $x \leftrightarrow y$

$$\{(-2, -6), (-6, -2), (-5, -1)\}$$

2. Find the inverse of the relation $y = 2x + 4$.

- [A] $y = \frac{2x-4}{2}$ [B] $y = \frac{x+4}{2}$ [C] $y = 4x+2$ [D] $y = \frac{x-4}{2}$

① Switch x and y
 $x = 2y + 4$

② Solve for y
 $x = 2y + 4$
 $-4 \quad -4$
 $\frac{x-4}{2} = \frac{2y}{2}$

*Make sure ~~everything~~
is divided by 2.

$$\frac{x-4}{2} = y$$

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3. Find the inverse of the relation: $y = -12x + 6$

[A] $y = 6x - 12$

[B] $y = x + \frac{1}{2}$

[C] $y = -\frac{x+6}{12}$

[D] $y = -\frac{x-6}{12}$

① Switch x and y
 $x = -12y + 6$

$$-\frac{x-6}{12} = y$$

② Solve for y
 $x = -12y + 6$
 $-6 \quad -6$

$$\frac{x-6}{-12} = \frac{-12y}{-12}$$

*Make sure you divide everything by -12 .

4. Find the inverse of the relation $y = -14x - 17$.

① Switch x and y
 $x = -14y - 17$

② Solve for y
 $x = -14y - 17$
 $+17 \quad +17$

$$\frac{x+17}{-14} = \frac{-14y}{-14}$$

$$-\frac{x+17}{14} = y$$