

Inverse Functions

10th Grade

Undoing a function, and the graph symmetry that reveals it.

An inverse function reverses what the original did. Its graph is the reflection in $y = x$.

1

REPLACE $f(x)$ WITH y

Just notation, to make the swap readable.

2

SWAP x AND y

This is the actual inversion.

3

SOLVE FOR y

Rearrange until y is alone.

4

CHECK

$f(f^{-1}(x))$ should give back x .

WORKED

$$f(x) = 2x + 3 \rightarrow y = 2x + 3 \rightarrow x = 2y + 3$$

$$y = (x - 3)/2, \text{ so } f^{-1}(x) = (x - 3)/2$$

f^{-1} does not mean $1/f$. It means the inverse function — a completely different thing.