

Exercise 3

For the following exercises, determine whether the relation is a function.

$$y^2 + 4 = x, \text{ for } x \text{ the independent variable and } y \text{ the dependent variable}$$

Solution

Solve the given equation for y .

$$y^2 = x - 4$$

Take the square root of both sides.

$$\sqrt{y^2} = \sqrt{x - 4}$$

Since there's an even power under an even root and the result is to an odd power, an absolute sign is needed.

$$|y| = \sqrt{x - 4}$$

Remove the absolute value sign by placing \pm on the right side.

$$y = \pm\sqrt{x - 4}$$

The relation is not a function because for any given input x , there are two corresponding outputs, $y = \sqrt{x - 4}$ and $y = -\sqrt{x - 4}$.