

Exercise 32

In Exercises 29–40, test for symmetry with respect to each axis and to the origin.

$$y = x^3 + x$$

Solution

Replacing x with $-x$ changes the equation, so there's no symmetry with respect to the y -axis.

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

Replacing y with $-y$ changes the equation, so there's no symmetry with respect to the x -axis.

$$-y = x^3 + x \rightarrow y = -x^3 - x$$

Replacing x with $-x$ and y with $-y$ does not change the equation, so there is symmetry with respect to the origin.

$$-y = (-x)^3 + (-x) \rightarrow -y = -x^3 - x \rightarrow y = x^3 + x$$

