Exercise 29

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

$$y = x^2 - 6$$

Solution

Replacing x with $-x$ doesn't change the equation.

$$y = (-x)^2 - 6 = x^2 - 6$$

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

$$-y = x^2 - 6 \quad \rightarrow \quad y = -x^2 + 6$$

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

$$-y = (-x)^2 - 6 \quad \rightarrow \quad -y = x^2 - 6 \quad \rightarrow \quad y = -x^2 + 6$$