Exercise 52

For the following exercises, sketch a graph of the given function.

$$f(x) = -(x + 2)^2 - 1$$

Solution

The parent function is the quadratic function.

$$x^2$$

Replacing x with $x + 2$ shifts the graph to the left by 2 units.

$$(x + 2)^2$$

Multiplying by -1 reflects the graph over the x-axis.

$$-(x + 2)^2$$

Subtracting 1 shifts the graph down by 1 unit.

$$-(x + 2)^2 - 1$$