

Sketch the graph

$$f(x) = x + 0$$

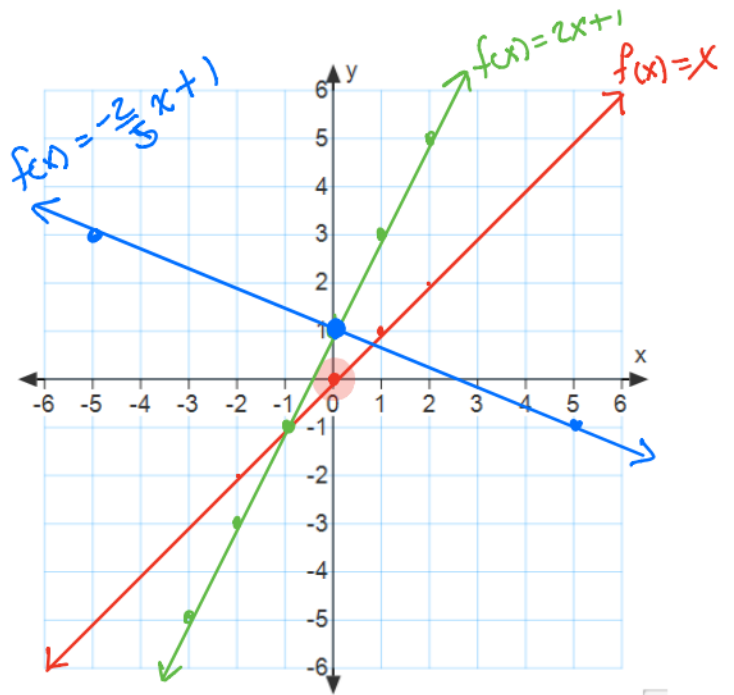
Describe how the graphs are related to the graph of f (parent function).

a) $f(x) = 2x + 1$

b) $f(x) = -\frac{2}{5}x + 1$

a) The function is steeper and was shifted 1 unit up.

b) The function has a negative steepness and was shifted 1 unit up.



Sketch the graph

$$f(x) = \sqrt{x}$$

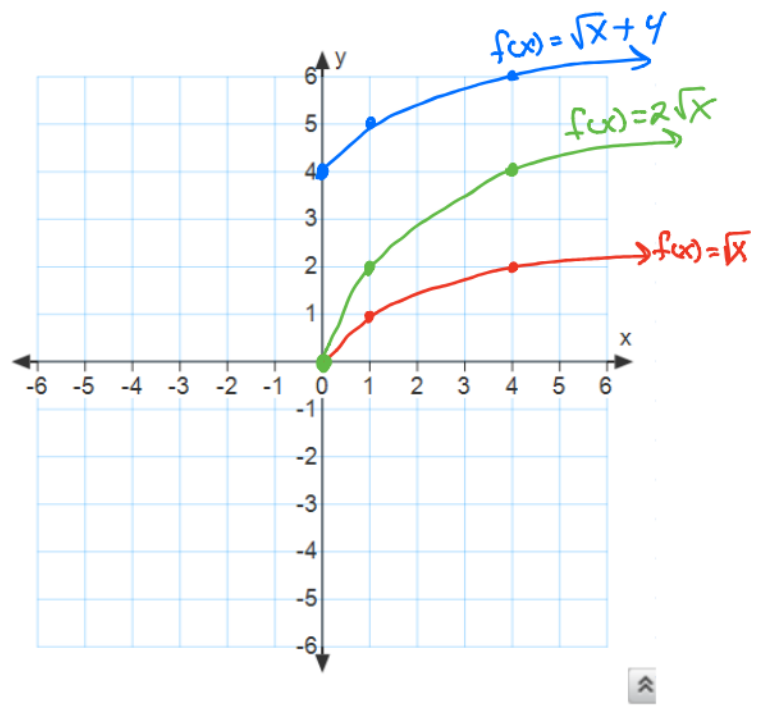
Describe how the graphs are related to the graph of f (parent function).

$$f(x) = 2\sqrt{x}$$

$$f(x) = \sqrt{x} + 4$$

The function is vertically stretched by a factor of 2.

function was shifted 4 units up.



Sketch the graph

• $f(x) = |x|$

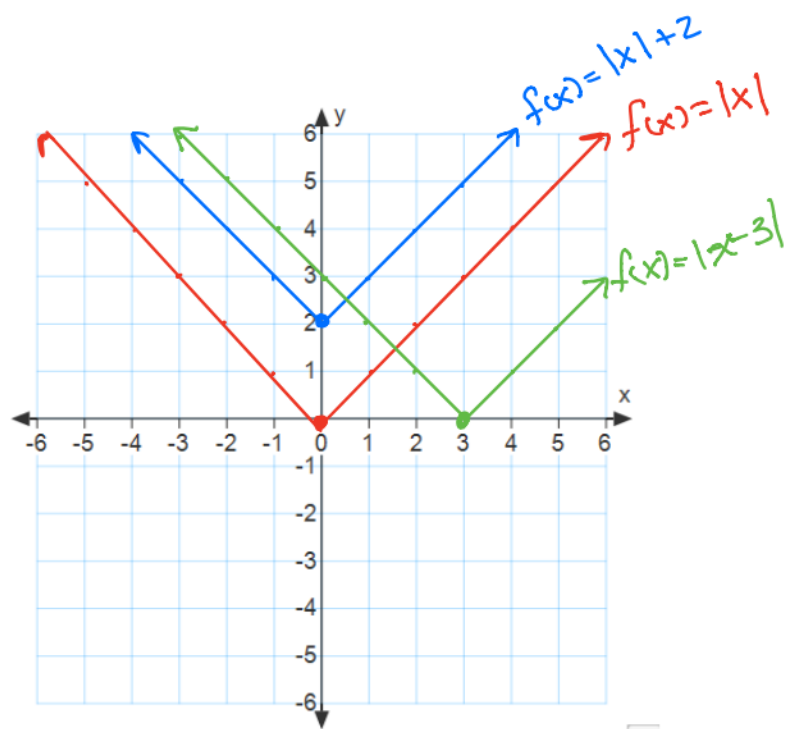
Describe how the graphs are related to the graph of f (parent function).

• $f(x) = |x| + 2$ ↑

• $f(x) = |x - 3|$

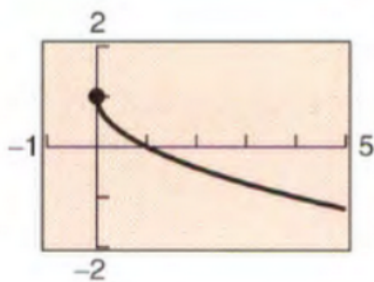
a) The function was translated 2 units up.

b) The function was shifted 3 units to the right.



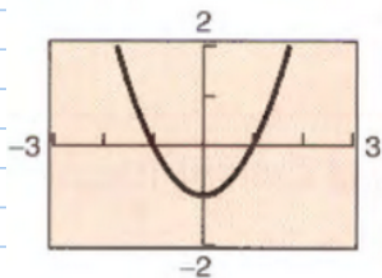
Identify the parent function. Write a function for the graph below using function notation.

1.



$$f(x) = -\sqrt{x} + 1$$

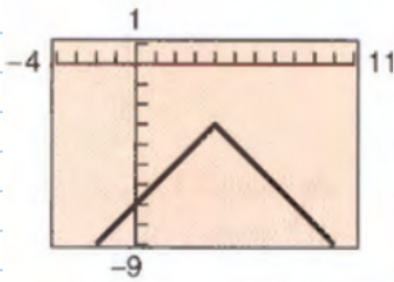
2.



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

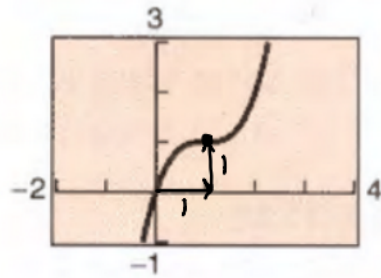
Identify the parent function. Write a function for the graph below using function notation.

1.



$$f(x) = -|x - 4| - 3$$

2.



$$f(x) = (x - 1)^3 + 1$$

Example

Use the graph of $f(x) = x^2$ to describe the graph of the function.

$$g(x) = -(x - 2)^2$$

- a. Shift $f(x)$ to the right 2 units and then reflect in the x -axis.
- b. Shift $f(x)$ to the left 2 units and then reflect in the x -axis.
- c. Shift $f(x)$ to the right 2 units and then reflect in the y -axis.
- d. None of the above.