

Warm Up: Function review...

Evaluate the following using $f(x) = x^2 - 2x - 3$.

a) $f(-7) = 60$

d) $f(a-3) = a^2 - 8a + 12$

b) $f(a) = a^2 - 2a - 3$

c) $f(x+2) = x^2 + 2x - 3$

1-5 Parent Functions

What is a parent function?

The most basic graph in the FAMILY.

Graph the following parent functions

Constant

Identity

Quadratic

Cubic

Square Root

Absolute Value

$$y = C$$

$$y = x$$

$$y = x^2$$

$$y = x^3$$

$$y = \sqrt{x}$$

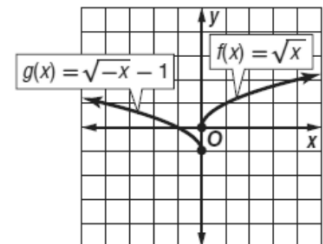
$$y = |x|$$

$$y = 2$$

Example

Identify the parent function $f(x)$ of $g(x) = \sqrt{-x} - 1$, and describe how the graphs of $g(x)$ and $f(x)$ are related. Then graph $f(x)$ and $g(x)$ on the same axes.

The graph of $g(x)$ is the graph of the square root function $f(x) = \sqrt{x}$ reflected in the y -axis and then translated one unit down.

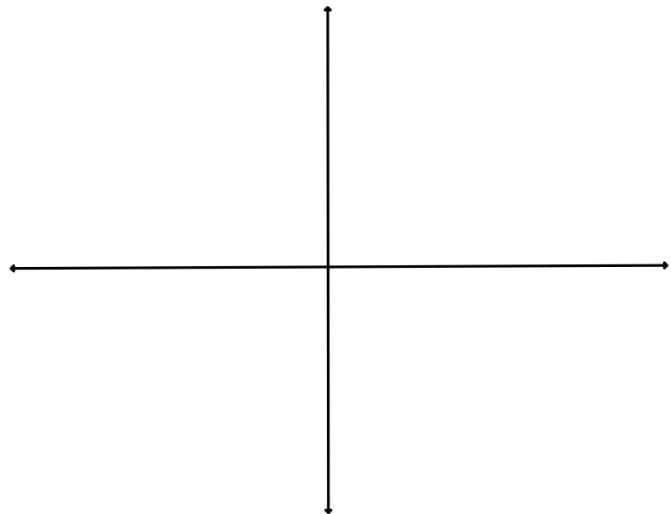
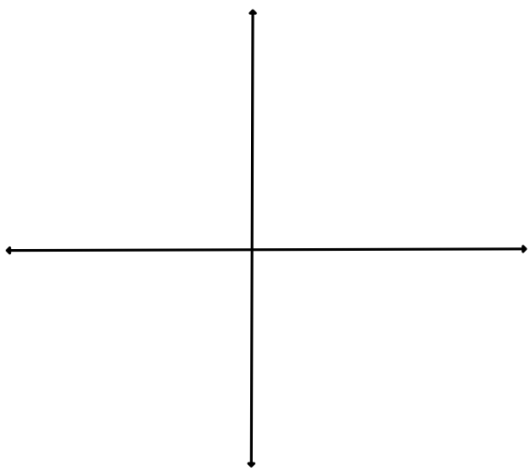


Exercises

Identify the parent function $f(x)$ of $g(x)$, and describe how the graphs of $g(x)$ and $f(x)$ are related. Then graph $f(x)$ and $g(x)$ on the same axes.

1. $g(x) = 0.5|x + 4|$

2. $g(x) = 2x^2 - 4$



1. Use the graph of $f(x) = \sqrt{x}$ to graph $g(x) = \sqrt{x + 3} + 1$.
2. Use the graph of $f(x) = |x|$ to graph $g(x) = -|2x|$.
3. Describe how the graph of $f(x) = x^2$ and $g(x) = x^2 - 3$ are related.
4. Identify the parent function $f(x)$ of $g(x) = 2|x + 2| - 3$. Describe how the graphs of $g(x)$ and $f(x)$ are related.
6. Use the graph of $f(x) = x^3$ to graph $g(x) = |(x + 1)^3|$.

CLASSWORK/HOMEWORK: In each of the following, identify the parent graph and then graph both functions.

$$\overline{g(x) = 3 - 2x^3}$$

$$\overline{g(x) = \sqrt{x + 4} - 3}$$

$$\overline{g(x) = -\frac{1}{4}(x + 2)^2 - 2}$$

$$\overline{g(x) = 6 - |x + 5|}$$