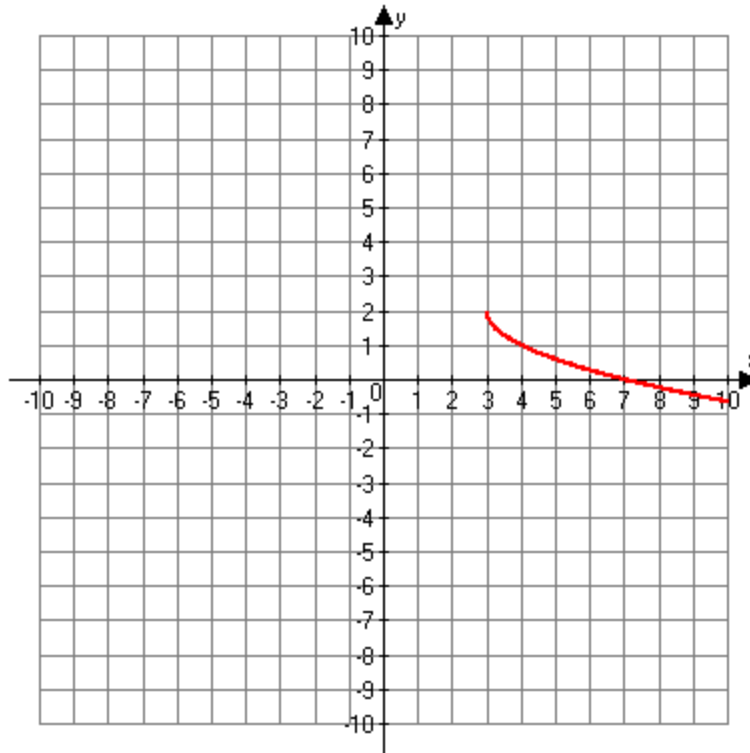**Algebra 2**
Unit: Radical Functions
Section: Graphing Radical Functions and Domain and Range

Multiple Choice: Graphing Square and Cube Roots
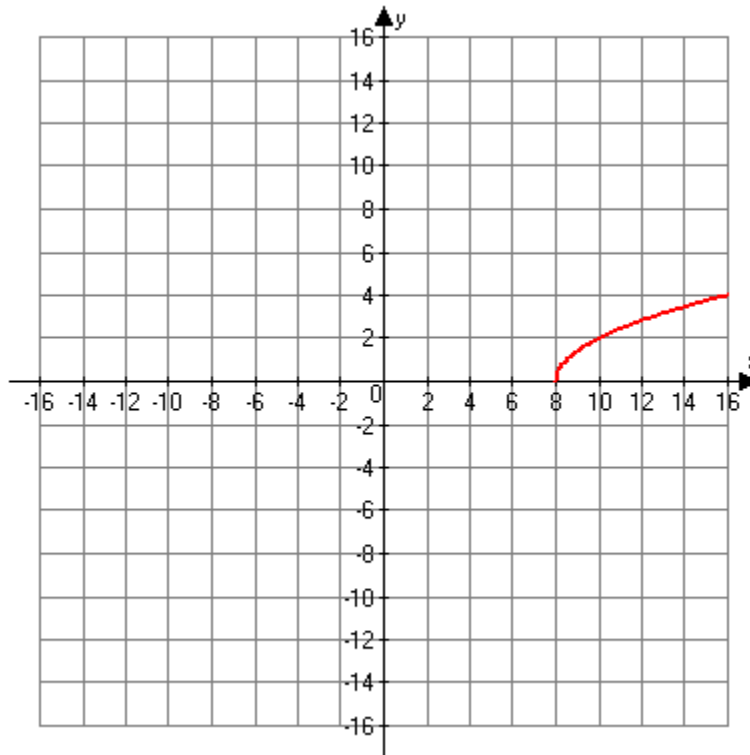
Directions: Choose the function of the graph.

1. Graph starting at the point (3, 2), going down through the points (4, 1) and (7, 0).
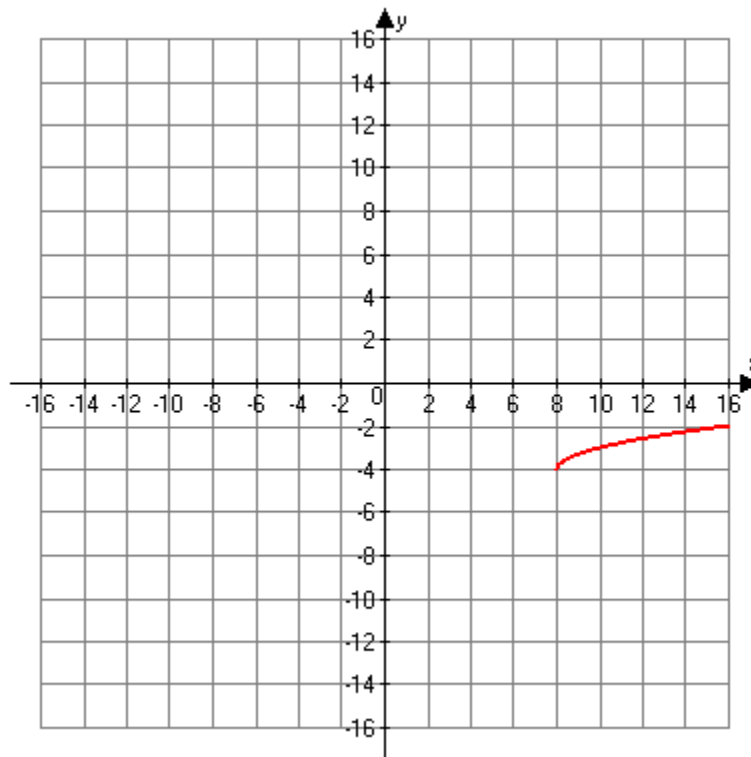

A. $f(x) = \sqrt{x-3} + 2$

B. $f(x) = -\sqrt{x+3} + 2$

C. $f(x) = -1\sqrt{x-3} + 2$

D. $f(x) = \sqrt{x-3} - 2$

2. Graph starting at the point (8, 0), going up through the points (10, 2) and (16, 4).

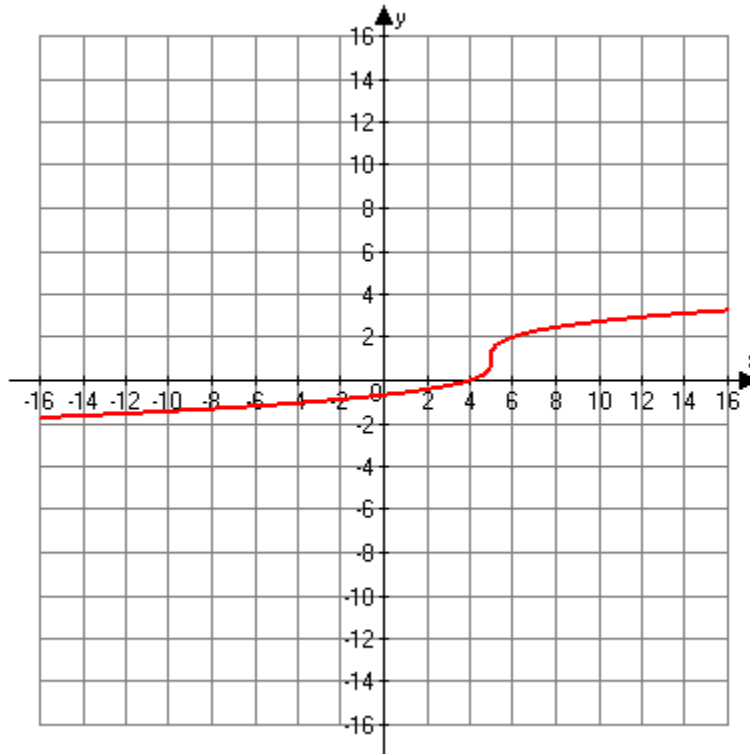A. $y = \sqrt{2x - 16}$

B. $y = \sqrt{-2x + 16}$

C. $y = \sqrt{2x + 16}$

D. $y = \sqrt{-2x + 16} + 1$

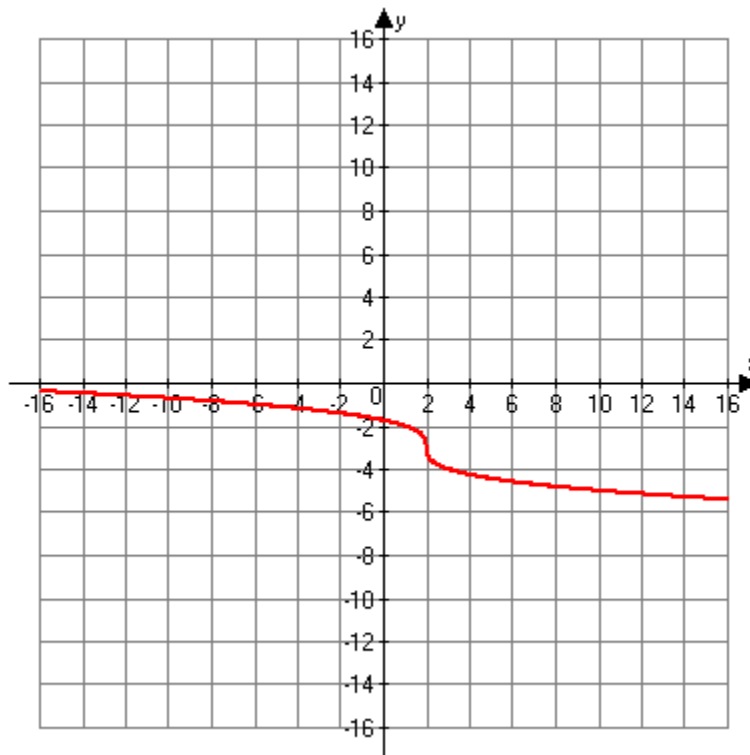3. Graph starting at the point (8, -4), going up through the points (10, -3) and (16, -2).

A. $f(x) = \sqrt{\dfrac{1}{2}x - 2} - 4$

B. $f(x) = \sqrt{\dfrac{1}{2}x - 4} + 4$

C. $f(x) = -\sqrt{\dfrac{1}{2}x - 4} - 4$

D. $f(x) = \sqrt{\dfrac{1}{2}x - 4} - 4$

4. Graph with its center at the point (5, 1), going down to the left through the points (4, 0) and (negative 3, negative 1) and also up to the right through the points (6, 2) and (13, 3).

A. $f(x) = \sqrt[3]{x-5} - 1$

B. $f(x) = \sqrt[3]{x-5} + 1$

C. $f(x) = -\sqrt[3]{x-5} + 1$

D. $f(x) = \sqrt[3]{x+5} + 1$

5. Graph with its center at the point (2, negative 3), going up to the left through the point (negative 6, negative 1) and also down to the right through the point (10, negative 5).

A. $f(x) = \sqrt[3]{-x+2} + 3$

B. $f(x) = \sqrt[3]{x-2} - 3$

C. $f(x) = -\sqrt[3]{-x+2} - 3$

D. $f(x) = \sqrt[3]{-x+2} - 3$

6. Graph starting at the point (negative one, 0) going up to the right through the point (2, 6).
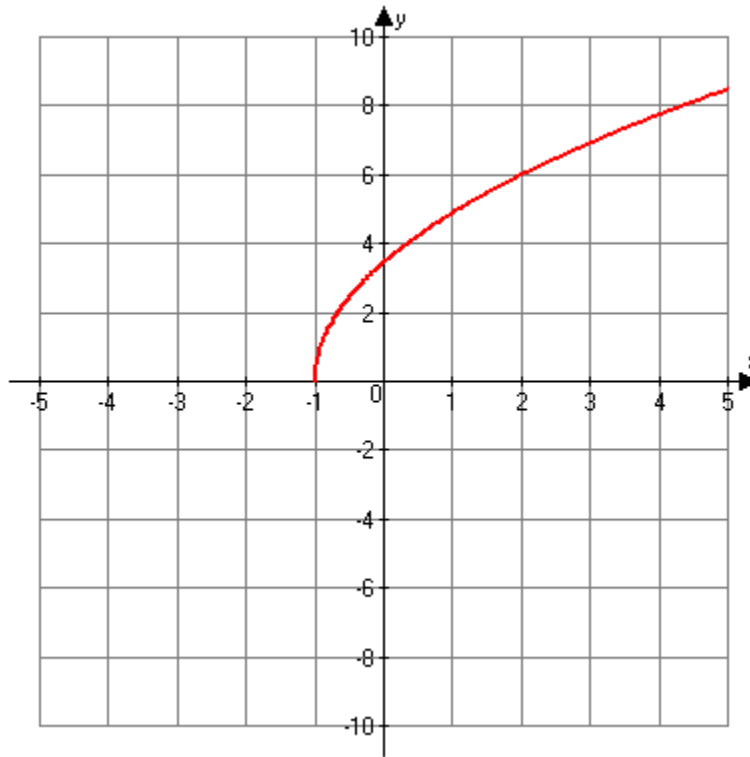
A. $y = 2\sqrt{3x + 3}$

B. $y = 2\sqrt{3x - 3}$

C. $y = 2\sqrt{3x + 3} - 1$

D. $y = -2\sqrt{3x + 3}$

Answers: Correct answers are marked with an asterisk. Incorrect answers have hints for what mistake you may have made.

1. A. $f(x) = \sqrt{x - 3} + 2$
    This equation still needs to be reflected across the x -axis.

    B. $f(x) = -\sqrt{x + 3} + 2$
    This equation needs to be x – 3. The graph moves to the right, not to the left.

    *C. $f(x) = -1\sqrt{x - 3} + 2$
    The graph is reflected across the x-axis, moves 3 units to the right and 2 units up.

    D. $f(x) = \sqrt{x - 3} - 2$
    The equation needs to be + 2. The graph moves up not down.

2. *A. $y = \sqrt{2x - 16}$ (compressed horizontally by a factor of 2)

    The graph moves 8 units to the right and is stretched horizontally by a factor of $\left|\dfrac{1}{2}\right|$

    B. $y = \sqrt{-2x + 16}$
    The graph is not reflected across the y-axis.

    C. $y = \sqrt{2x + 16}$
    The graph moves to the right, not to the left.

    D. $y = \sqrt{-2x + 16} + 1$
    The graph does not move 1 unit up.

3. A. $f(x) = \sqrt{\dfrac{1}{2}x - 2} - 4$

    The equation needs to be $\dfrac{1}{2}x - 4$.

    B. $f(x) = \sqrt{\dfrac{1}{2}x - 4} + 4$

    The equation needs to say -4. The graph moves down, not up.

    C. $f(x) = -\sqrt{\dfrac{1}{2}x - 4} - 4$

    The graph is not reflected across the x-axis.

*D. $f(x) = \sqrt{\frac{1}{2}x - 4} - 4$

The graph moves 8 units to the right, 4 units down, and is stretched horizontally by a factor of |2|.

4. A. $f(x) = \sqrt[3]{x - 5} - 1$

The equation needs to be + 1. The graph moves up, not down.

*B. $f(x) = \sqrt[3]{x-5} + 1$

The graph moves 5 units to the right and 1 unit up.

C. $f(x) = -\sqrt[3]{x - 5} + 1$

The graph is not reflected across the x-axis.

D. $f(x) = \sqrt[3]{x + 5} + 1$

The equation needs to be x – 5. The graph moves to the right, not left.

5. A. $f(x) = \sqrt[3]{-x + 2} + 3$

The equation needs to be -3. The graph moves down, not up.

B. $f(x) = \sqrt[3]{x - 2} - 3$

The graph needs to be reflected across the y-axis.

C. $f(x) = -\sqrt[3]{-x + 2} - 3$

The graph is not reflected across both the x-axis and y-axis.

*D. $f(x) = \sqrt[3]{-x+2} - 3$

The graph is reflected across the y-axis, moves 2 units to the right and 3 units down.

6. *A. $y = 2\sqrt{3x + 3}$

The graph is stretched vertically by a factor of |2|, moves 1 unit to the left, and is stretched horizontally by a factor of $\left|\frac{1}{3}\right|$. Compressed horizontally by a factor of 3.

B. $y = 2\sqrt{3x - 3}$

The equation needs to be 3x + 3. The graph moves to the left, not to the right.

C. $y = 2\sqrt{3x + 3} - 1$

The graph has no vertical shift.

D. $y = -2\sqrt{3x + 3}$

The graph is not reflected across the x-axis.