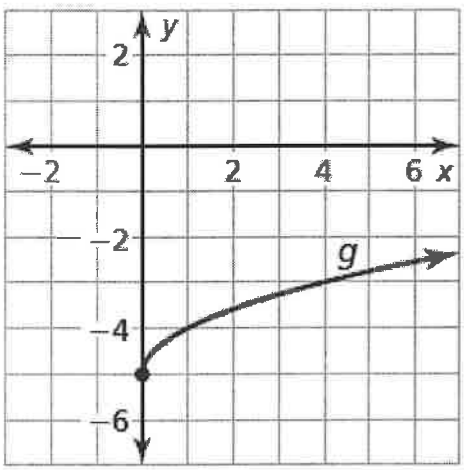
ANSWER PRESENTATION TOOL

Algebra 2 - Student Edit 5 3 - Practice 2-56 ALL EVEN Show Solı

ODD

2. Make a table of values and sketch the graph.

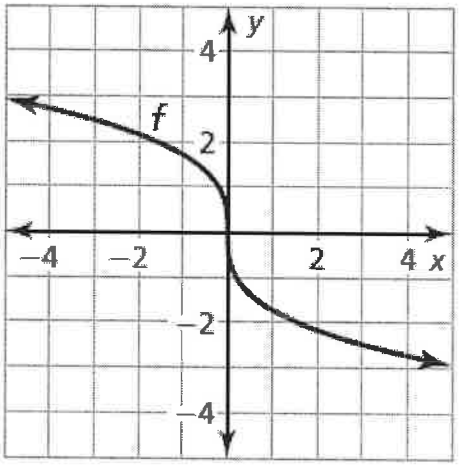
x	0	1	2	3	4
y	-5	-4	-3.59	-3.27	-3



The radicand of a square root must be nonnegative. So, the domain is $x \geq 0$. The range is $y \geq -5$.

4. Make a table of values and sketch the graph.

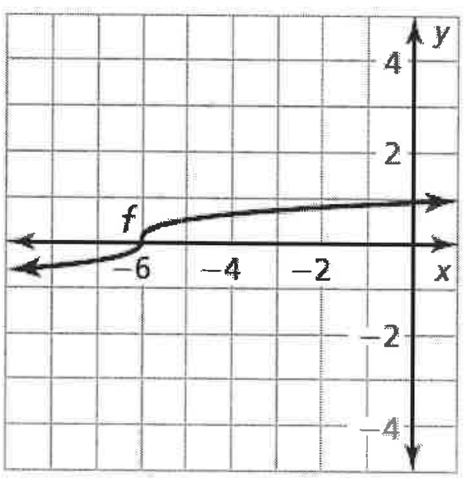
x	−4	−2	0	2	4
y	2.71	2.15	0	−2.15	−2.71



The radicand of a cube root can be any real number. So, the domain and range are all real numbers.

6. Make a table of values and sketch the graph.

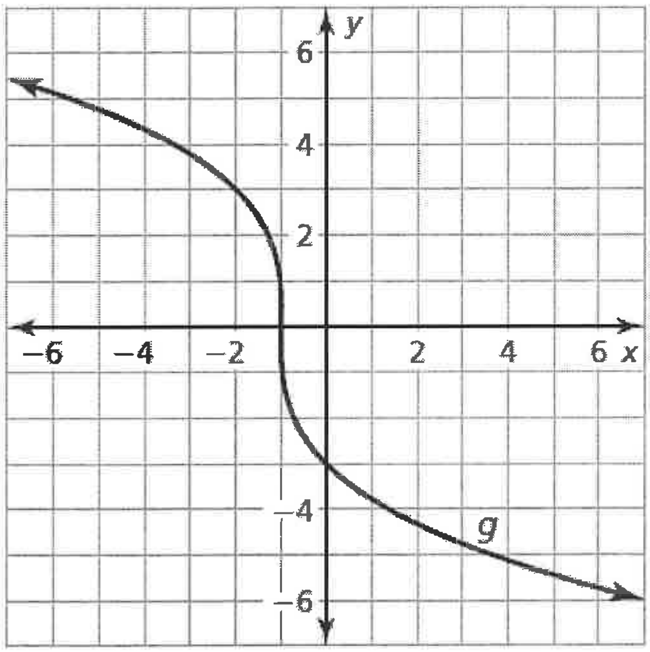
x	−8	−6	−4	−2	0	2	4
y	−0.63	0	0.63	0.79	0.90	1	1.08



The radicand of a cube root can be any real number. So, the domain and range are all real numbers.

8. Make a table of values and sketch the graph.

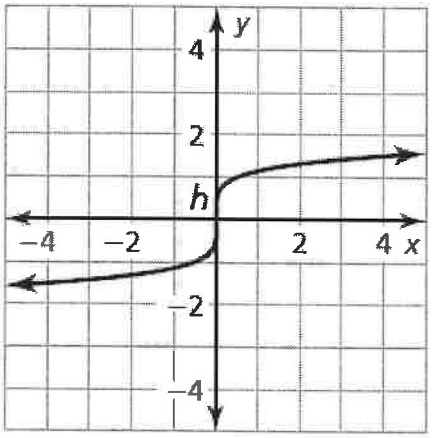
x	-4	-2	0	2	4
y	4.32	3	-3	-4.32	-5.13



The radicand of a cube root can be any real number. So, the domain and range are all real numbers.

10. Make a table of values and sketch the graph.

x	-4	-2	0	2	4
y	-1.52	-1.32	0	1.32	1.52



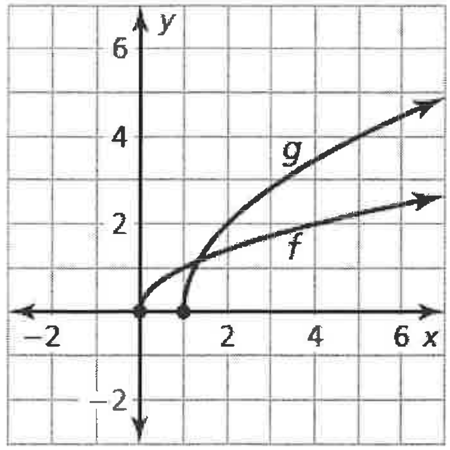
The radicand of a fifth root can be any real number. So, the domain and range are all real numbers.

12. D; The function is a translation 3 units up of the parent square root function. The domain is $x \geq 0$ and the range is $y \geq 3$.

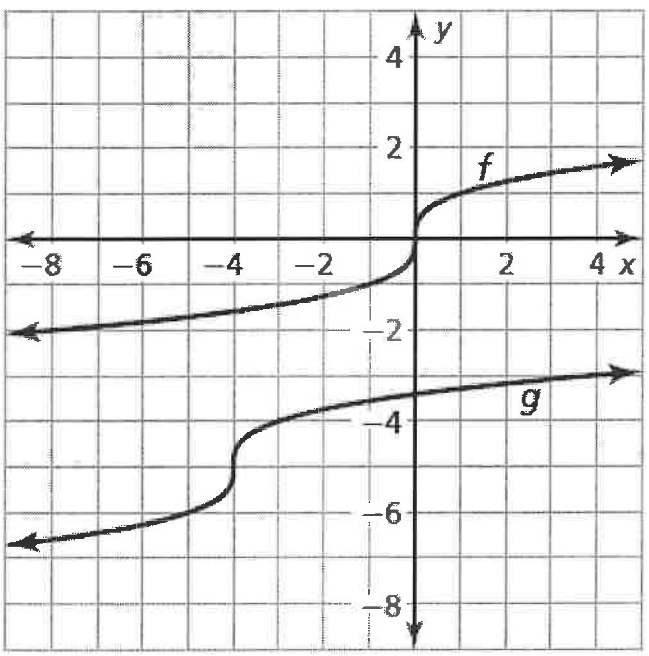
14. A; The function is a translation 3 units down of the parent square root function. The domain is $x \geq 0$ and the range is $y \geq -3$.

16. C; The function is a translation 3 units up and 3 units right of the parent square root function. The domain is $x \geq 3$ and the range is $y \geq 3$.

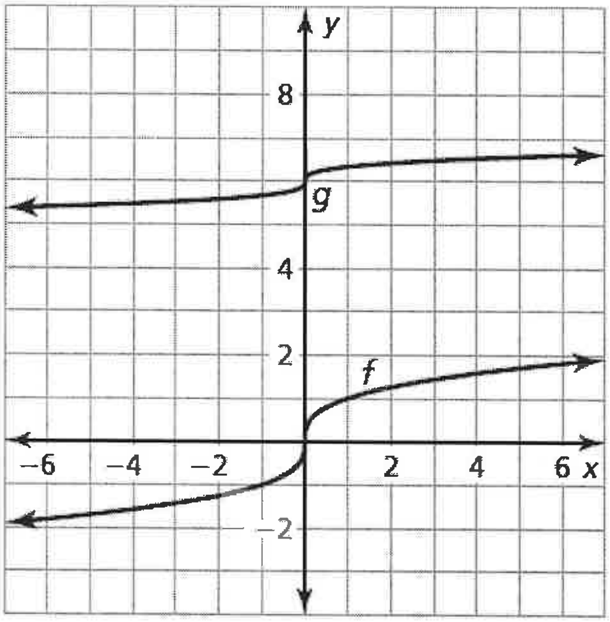
18. Notice that the function is of the form $g(x) = a\sqrt{x - h}$, where $a = 2$ and $h = 1$. So, the graph of g is a translation 1 unit right followed by a vertical stretch by a factor of 2 of the graph of f.



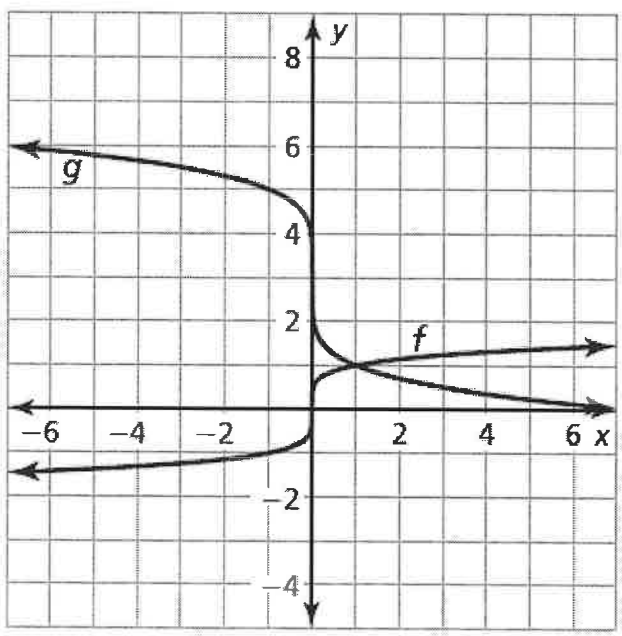
20. Notice that the function is of the form $g(x) = \sqrt[3]{x - h} + k$, where $h = -4$ and $k = -5$. So, the graph of g is a translation 4 units left and 5 units down of the graph of f.



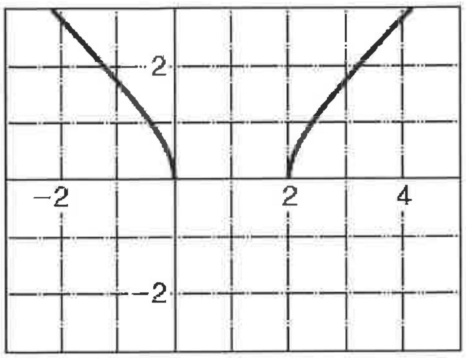
22. Notice that the function is of the form $g(x) = ax^{1/2} + k$, where $a = \frac{1}{3}$ and $k = 6$. So, the graph of g is a vertical shrink by a factor of $\frac{1}{3}$ followed by a translation 6 units up of the graph of f.



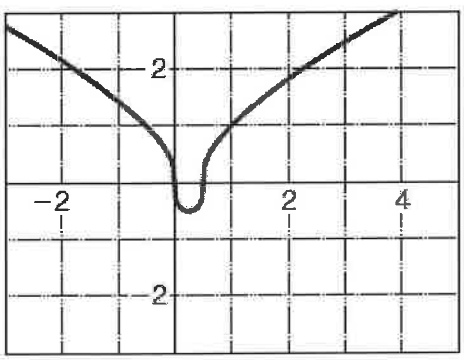
24. Notice that the function is of the form $g(x) = \sqrt[5]{ax} + k$, where $a = -32$ and $k = 3$. So, the graph of g is a horizontal shrink by a factor of $\frac{1}{32}$ and a reflection in the y-axis followed by a translation 3 units up of the graph of f.



26. The function is a horizontal stretch, not a horizontal shrink. "The graph of g is a horizontal stretch by a factor of 2 and a translation 3 units up of the parent square root function."

28. 

The domain is $x \leq 0$ and $x \geq 2$. The range is $y \geq 0$.

30. 

The domain is all real numbers. To find the range, find the x-coordinate of the vertex of the polynomial under the radical.

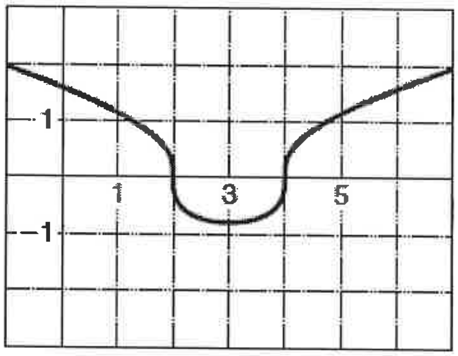
$$x = -\frac{b}{2a} = -\frac{-1}{2(2)} = \frac{1}{4}$$

Substitute into the function to find the vertex.

$$f\left(\frac{1}{4}\right) = \sqrt[3]{2\left(\frac{1}{4}\right)^2 - \frac{1}{4}} = \sqrt[3]{\frac{1}{8} - \frac{1}{4}} = \sqrt[3]{-\frac{1}{8}} = -\frac{1}{2}$$

So, the range of the function is $y \geq -\frac{1}{2}$.

32.



The domain is all real numbers. To find the range, find the x-coordinate of the vertex of the polynomial under the radical.

$$x = -\frac{b}{2a} = -\frac{(-3)}{2\left(\frac{1}{2}\right)} = 3$$

Substitute into the function to find the vertex.

$$h(3) = \sqrt[3]{\frac{1}{2}(3)^2 - 3(3) + 4} = \sqrt[3]{\left(-\frac{1}{2}\right)\left(\frac{4}{4}\right)} = -\frac{\sqrt[3]{4}}{2}$$

So, the range of the function is $y \geq -\frac{\sqrt[3]{4}}{2}$.

34. $s(K) = \frac{v(K)}{1.944} = \frac{643.855}{1.944}\sqrt{\frac{K}{273.15}}$

Next, find $s(305)$.

$$s(305) = \frac{643.855}{1.944}\sqrt{\frac{305}{273.15}} \approx 350$$

The speed is about 350 meters per second when the air temperature is 305 Kelvin.

36. Step 1 First write a function h that represents the reflection of f.

$$\begin{aligned} h(x) &= f(-x) \\ &= 2\sqrt[3]{(-x) - 1} \\ &= 2\sqrt[3]{-x - 1} \end{aligned}$$

Step 2 Then write a function g that represents the translation of h.

$$\begin{aligned} g(x) &= h(x + 1) \\ &= 2\sqrt[3]{(-x + 1) - 1} \\ &= 2\sqrt[3]{-x} \end{aligned}$$

The transformed function is $g(x) = 2\sqrt[3]{-x}$.

38. Step 1 First write a function h that represents the translations of f.

$$\begin{aligned} h(x) &= f(x - 5) - 1 \\ &= \left(-\tfrac{1}{2}\sqrt[4]{x - 5} + \tfrac{3}{2}\right) - 1 \\ &= -\tfrac{1}{2}\sqrt[4]{x - 5} + \tfrac{1}{2} \end{aligned}$$

Step 2 Then write a function g that represents the reflection of h.

$$\begin{aligned} g(x) &= -h(x) \\ &= -\left(-\tfrac{1}{2}\sqrt[4]{x - 5} + \tfrac{1}{2}\right) \\ &= \tfrac{1}{2}\sqrt[4]{x - 5} - \tfrac{1}{2} \end{aligned}$$

The transformed function is $g(x) = \frac{1}{2}\sqrt[4]{x - 5} - \frac{1}{2}$.

40. Step 1 First write a function h that represents the reflection of f.

$$h(x) = f(-x) = \sqrt[3]{-x}$$

Step 2 Then write a function g that represents the translation of h.

$$g(x) = h(x-2) = \sqrt[3]{-(x-2)} = -\sqrt[3]{x-2}$$

The transformed function is $g(x) = -\sqrt[3]{x-2}$.

42. The graph of g is a reflection in the x-axis followed by a translation 9 units up of the graph of f.

$$g(x) = -f(x) + 9 = -\tfrac{1}{3}\sqrt{x-1} + 9$$

44. The graph of g is a reflection in the y-axis and a vertical shrink by a factor of 4 followed by a translation 6 units up of the graph of f.

$$g(x) = f(-x) + 6 = \tfrac{1}{4}\sqrt[3]{(-x)^2 + 10(-x)} + 6 = \tfrac{1}{4}\sqrt[3]{x^2 - 10x} + 6$$

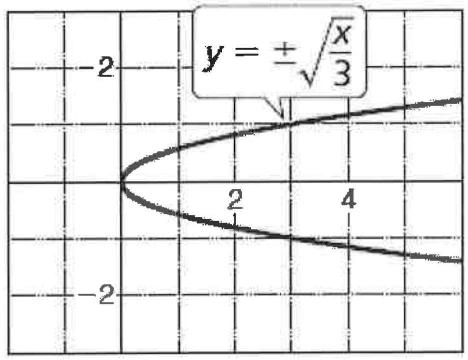
46. Step 1 Solve for y.

$$3y^2 = x$$
$$y^2 = \frac{1}{3}x$$
$$y = \pm\sqrt{\frac{1}{3}x}$$

Step 2 Graph both radical functions.

$$y_1 = \sqrt{\frac{1}{3}x}$$
$$y_2 = -\sqrt{\frac{1}{3}x}$$

The vertex is (0, 0) and the parabola opens right.



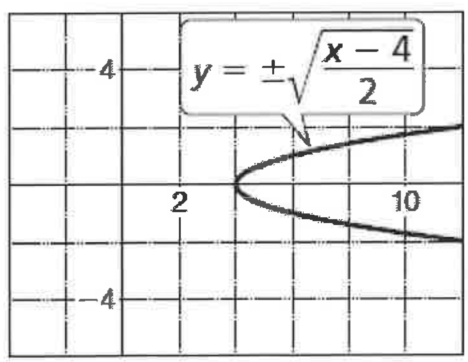
48. Step 1 Solve for y.

$$2y^2 = x - 4$$
$$y^2 = \frac{1}{2}x - 2$$
$$y = \pm\sqrt{\frac{1}{2}x - 2}$$

Step 2 Graph both radical functions.

$$y_1 = \sqrt{\frac{1}{2}x - 2}$$
$$y_2 = -\sqrt{\frac{1}{2}x - 2}$$

The vertex is (4, 0) and the parabola opens right.



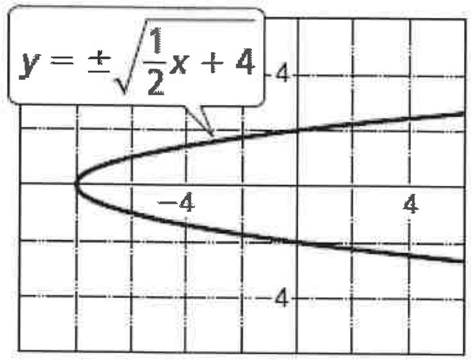
50. Step 1 Solve for y.

$$\frac{1}{2}x = y^2 - 4$$
$$\frac{1}{2}x + 4 = y^2$$
$$y = \pm\sqrt{\frac{1}{2}x + 4}$$

Step 2 Graph both radical functions.

$$y_1 = \sqrt{\frac{1}{2}x + 4}$$
$$y_2 = -\sqrt{\frac{1}{2}x + 4}$$

The vertex is $(-8, 0)$ and the parabola opens right.

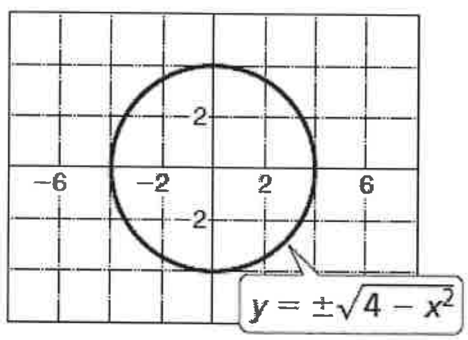


52. Step 1 Solve for y.

$$x^2 + y^2 = 4$$
$$y^2 = 4 - x^2$$
$$y = \pm\sqrt{4 - x^2}$$

Step 2 Graph both radical functions using a square viewing window.

$$y_1 = \sqrt{4 - x^2}$$
$$y_2 = -\sqrt{4 - x^2}$$



The radius is 2 units.
The x-intercepts are ± 2. The y-intercepts are ± 2.

54. Step 1 Solve for y.

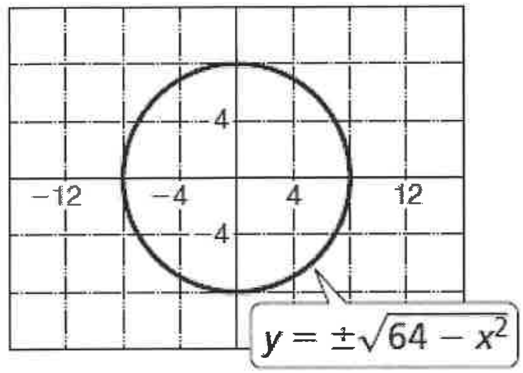
$$64 - x^2 = y^2$$

$$y = \pm\sqrt{64 - x^2}$$

Step 2 Graph both radical functions using a square viewing window.

$y_1 = \sqrt{64 - x^2}$

$y_2 = -\sqrt{64 - x^2}$



The radius is 8 units.

The x-intercepts are ± 8. The y-intercepts are ± 8.

56. Step 1 Solve for y.

$$x^2 = 100 - y^2$$

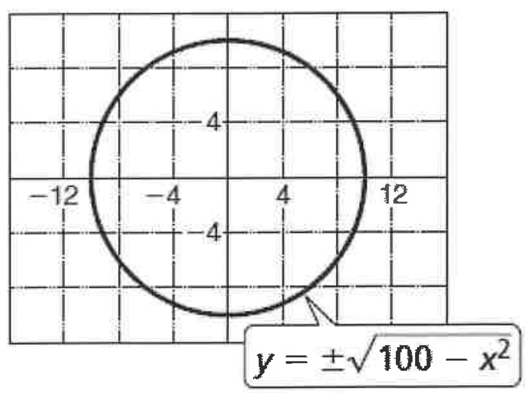
$$y^2 + x^2 = 100$$

$$y = \pm\sqrt{100 - x^2}$$

Step 2 Graph both radical functions using a square viewing window.

$y_1 = \sqrt{100 - x^2}$

$y_2 = -\sqrt{100 - x^2}$



The radius is 10 units.

The x-intercepts are ± 10. The y-intercepts are ± 10.