

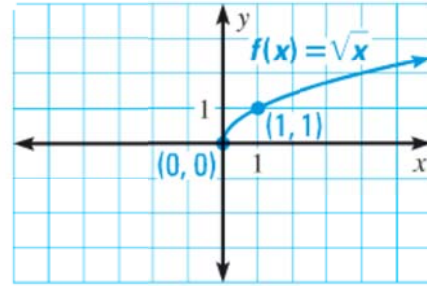
8.5 Graph Square Root and Cubic Root Functions

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

| | | | |
|------|---|---|---|
| x | 0 | 1 | 4 |
| F(x) | | | |

Domain:

Range:



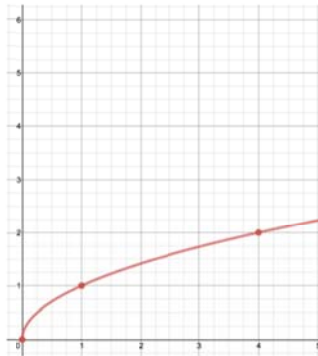
What happens when we multiply the radical by a?

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

$$f(x) = 3\sqrt{x}$$

| | | | |
|------|---|---|---|
| X | 0 | 1 | 4 |
| F(x) | | | |

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



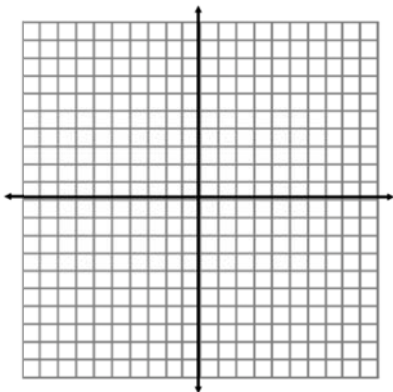
$$f(x) = \frac{1}{2}\sqrt{x}$$

| | | | |
|------|---|---|---|
| X | 0 | 1 | 4 |
| F(x) | | | |

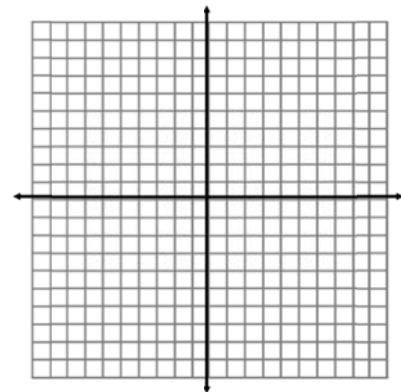
$$f(x) = \sqrt{x-h}$$

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

ex 1:



ex 2:

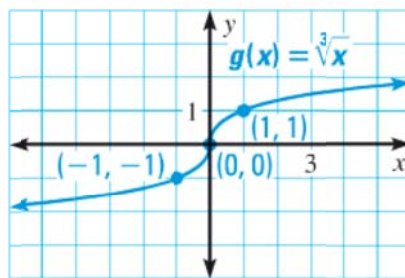


$$f(x) = \sqrt[3]{x}$$

| | | | |
|------|----|---|---|
| x | -1 | 0 | 1 |
| F(x) | | | |

Domain:

Range:



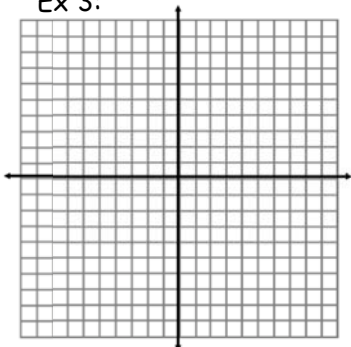
$$f(x) = a\sqrt[3]{x-h} + k$$

a

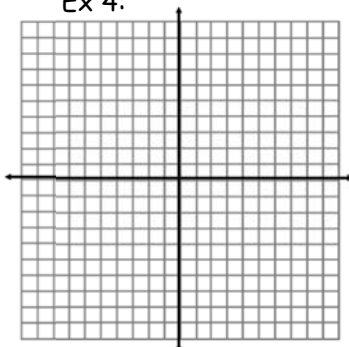
h

k

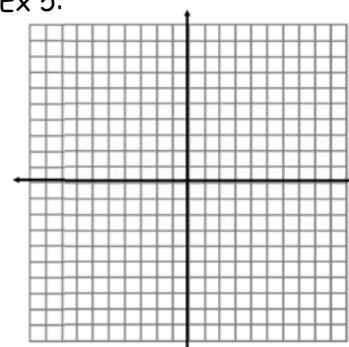
Ex 3:



Ex 4:



Ex 5:



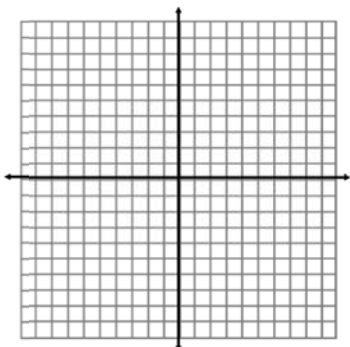
Ex 6:

Ex 7:

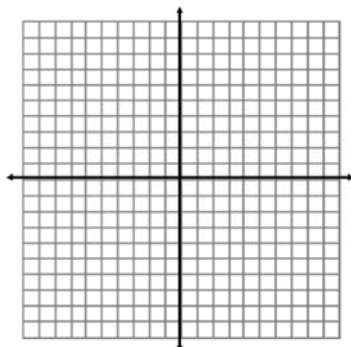
Ex 8:

You Try!

1)



2)



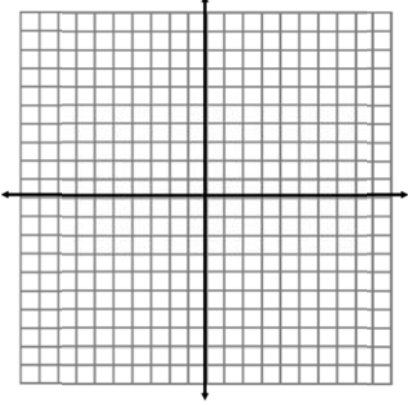
3)

Summarize your notes:

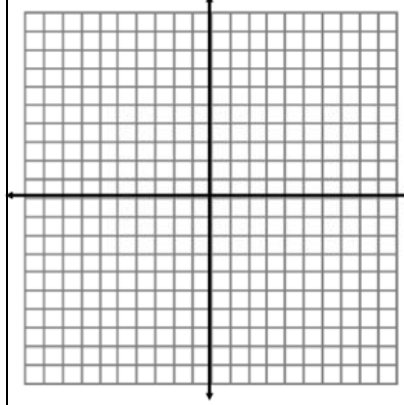
8.5 Practice Problems

Directions: Graph the function and then state the domain and range.

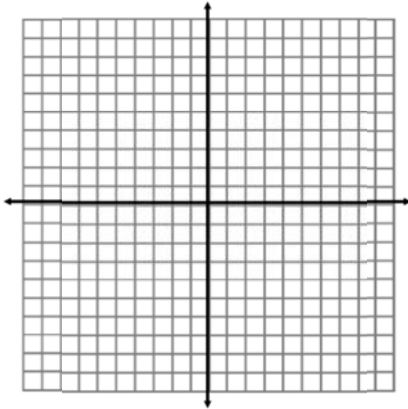
1) $f(x) = \sqrt{x+6}$



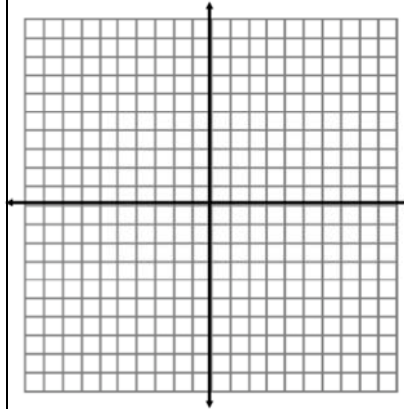
2) $g(x) = \sqrt[3]{x} - 1$



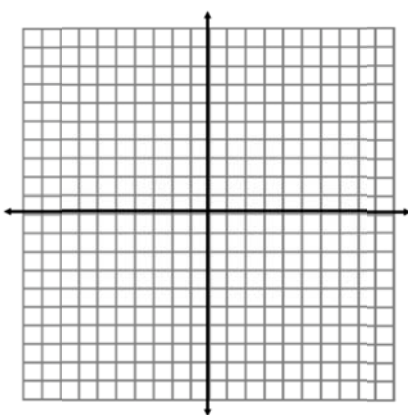
3) $h(x) = 2\sqrt[3]{x} + 2$



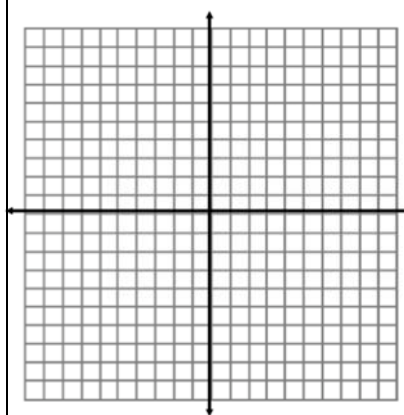
4) $g(x) = 2\sqrt{x} - 3$



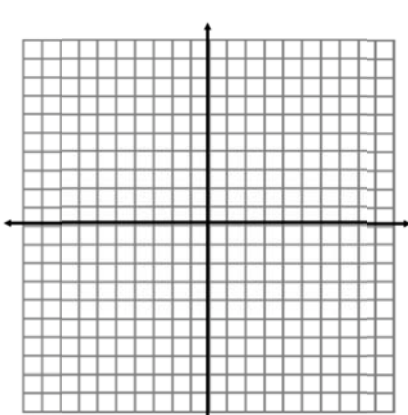
5) $f(x) = 4 - \sqrt{x-3}$



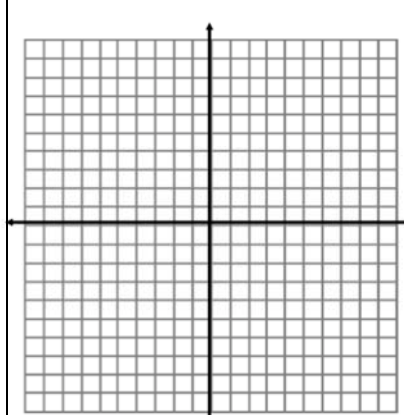
6) $f(x) = -1 - \sqrt[3]{x-2}$



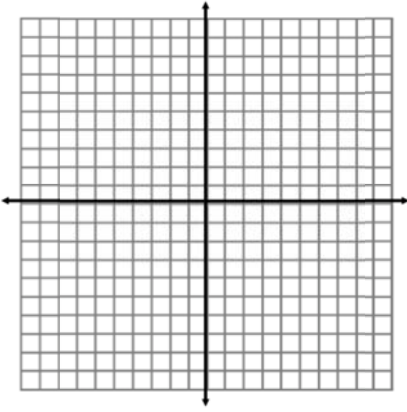
7) $h(x) = \frac{1}{2}\sqrt{x-2} - 3$



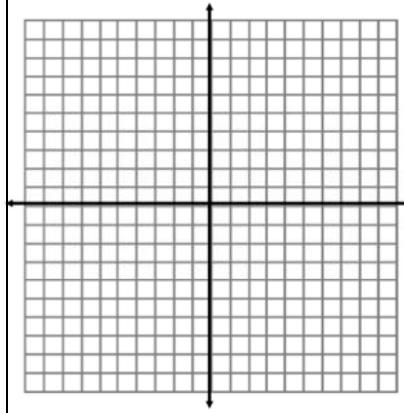
8) $f(x) = -(x+4)^{1/2} + 3$



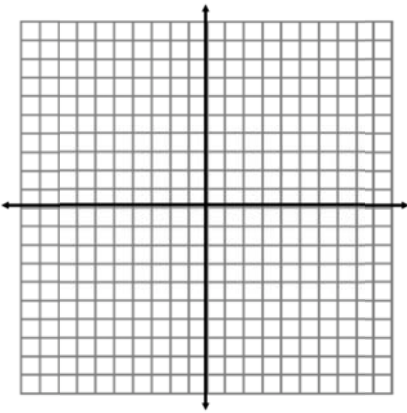
9) $(x) = -\frac{1}{2}\sqrt[3]{x+3} + 1$



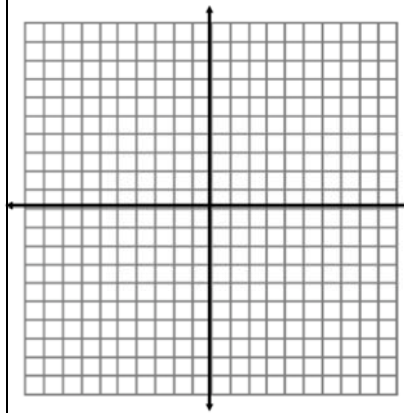
10) $(x) = \sqrt[3]{x-4} - 3$



11) $(x) = (x-3)^{1/3} + 4$

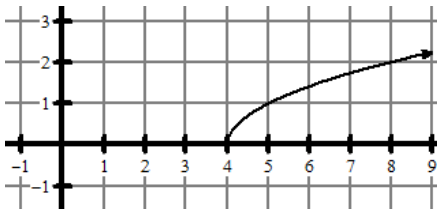


12) $f(x) = \sqrt{x-3} - 4$

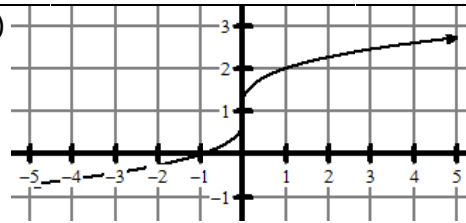


Directions: Write the equation of each function.

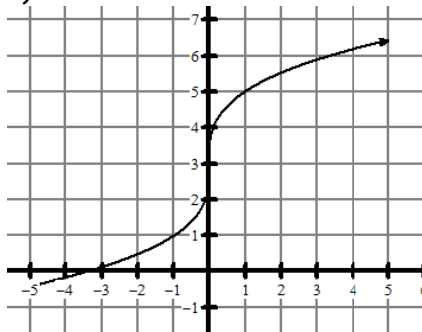
13)



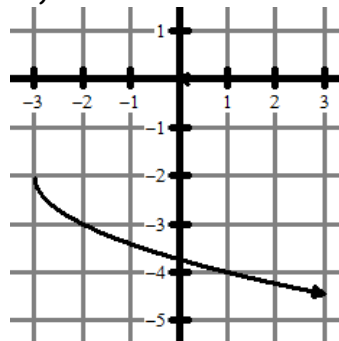
14)



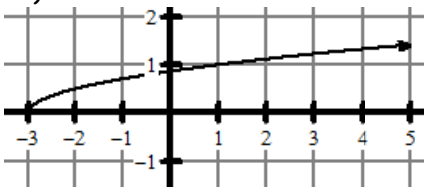
15)



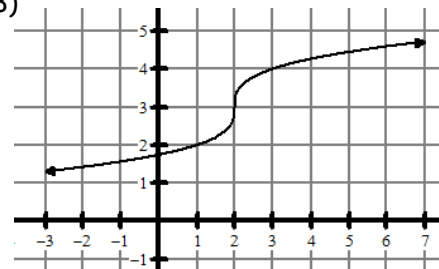
16)



17)

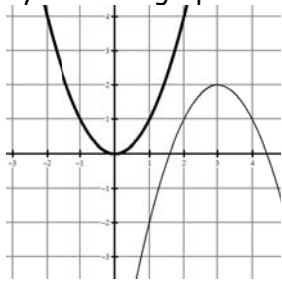


18)



Algebra Skillz

Below, the parent function $f(x) = x^2$ is represented by the bold graph.



Write the equation of the function not in bold.

4) $\frac{10}{\sqrt{20}}$

3) $\frac{\sqrt{3}}{2\sqrt{6}}$

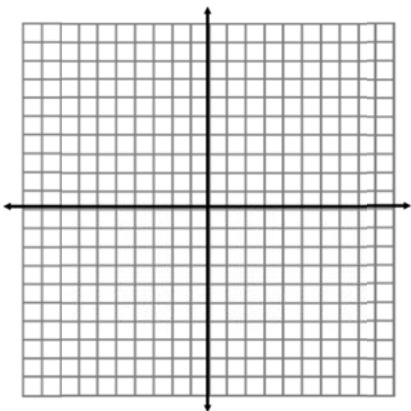
5) Factor:
 $10b^3 + 19b^2 + 7b$

6) Factor and solve.
 $8x^2 + 32 = 60x$

8.5 Application and Extension

1) Graph and state the domain and range.

$$f(x) = -2(x - 4)^{1/3}$$



2) Find the equations of the function.



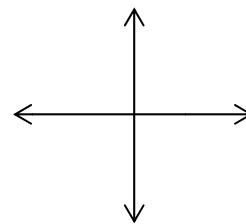
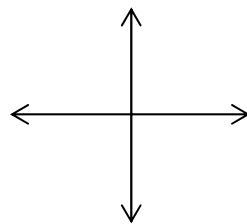
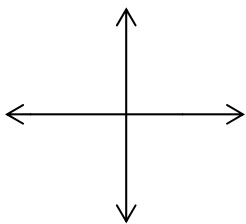
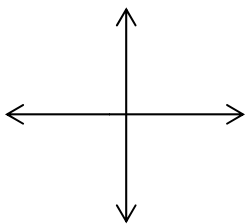
3) Use your graphing calculator to sketch the following functions.

$$y = \sqrt[4]{x}$$

$$y = \sqrt[5]{x}$$

$$y = \sqrt[6]{x}$$

$$y = \sqrt[7]{x}$$



a) Describe the general shape of any function of $y = \sqrt[n]{x}$ when n is an even number.

b) Describe the general shape of any function of $y = \sqrt[n]{x}$ when n is an odd number.

c) What is in common about the domain and range of any function of $y = \sqrt[n]{x}$ when n is an even number?

d) What is in common about the domain and range of any function of $y = \sqrt[n]{x}$ when n is an odd number?

4) WITHOUT GRAPHING the function, determine the domain and range of the following.

a) $y = \sqrt{x + 5}$

b) $y = \sqrt[3]{x} - 6$

D=

D=

R=

R=

a) $y = 2(x - 3)^{1/3} + 4$

b) $y = -(x - 3)^{1/2} - 6$

D=

D=

R=

R=

SAT PREP Below are sample SAT questions. The SAT is the main standardized test that colleges look at for admission. One is multiple choices; the other is free response where you must grid in your answer. Blow it up.

MULTIPLE CHOICE

If n and p are positive integers and $10^{n/p} = \sqrt[4]{10,000}$, then the product of n and p is:

- (A) -1
- (B) 0
- (C) 4
- (D) 8
- (E) 12

GRID IN

If $p^m \cdot p^7 = p^{16}$, and $(p^6)^n = p^{-24}$, what is the value of $m-n$?

| | | | |
|---|---|---|---|
| | | | |
| • | • | • | • |
| | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 2 |
| 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 |
| 6 | 6 | 6 | 6 |
| 7 | 7 | 7 | 7 |
| 8 | 8 | 8 | 8 |
| 9 | 9 | 9 | 9 |