

WARM UP

Solve for x.

$$1) \sqrt{x+7} + 5 = x \qquad 2) 3(x+1)^{\frac{2}{3}} = 48$$

Write each expression in simplest form.

$$3) (-27x^{15})^{\frac{-2}{3}} = -27^{\frac{1}{3}} x^{10} \qquad 4) (3x^{\frac{2}{5}})(-8x^{\frac{-7}{5}}) = \frac{-24}{x}$$

$(-27^{-2/3} x^{-10}) \cdot \frac{1}{9x^{10}}$

5) Complete the table of values for: $y = \sqrt{x}$

x	y
-4	N/A
0	0
1	1
9	3
16	4

7.8 Graphing Radical Equations

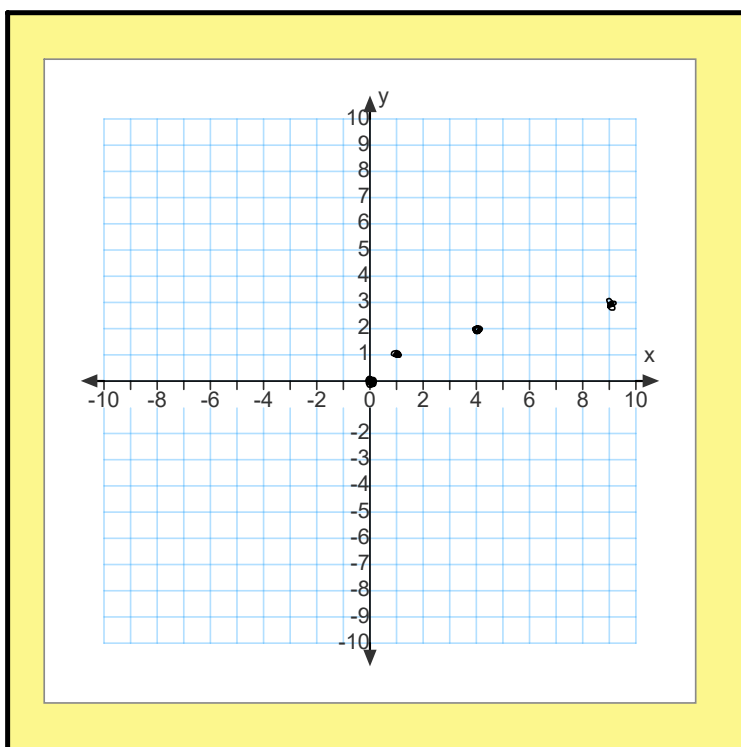
On your calculator, graph

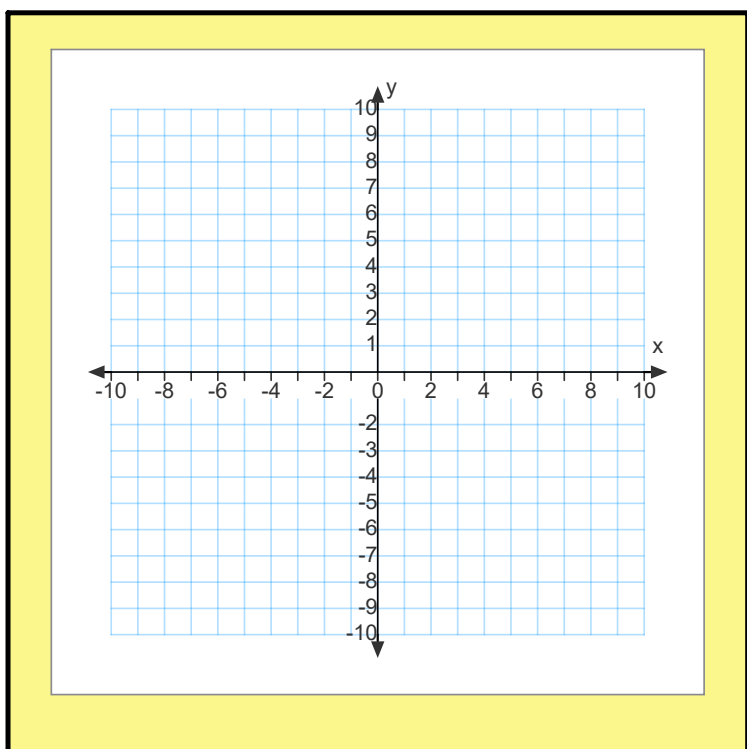
$$y = \sqrt{x}$$

$$y = \sqrt{x} + 3$$

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

$$y = \sqrt{x} - 4$$





On your calculator, graph

$$y = \sqrt{x}$$

$$y = \sqrt{x + 3}$$

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

$$y = \sqrt{x - 4}$$

Graphing Radical Equations

Summary What happens to the graph of

$$y = \sqrt{x} ?$$

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

$$y = \sqrt{x} - a$$

$$y = a\sqrt{x-h} + k$$

$a < 0$
(a is neg)
reflects over
X axis

left/right
opp of
sign

up/down
true to sign

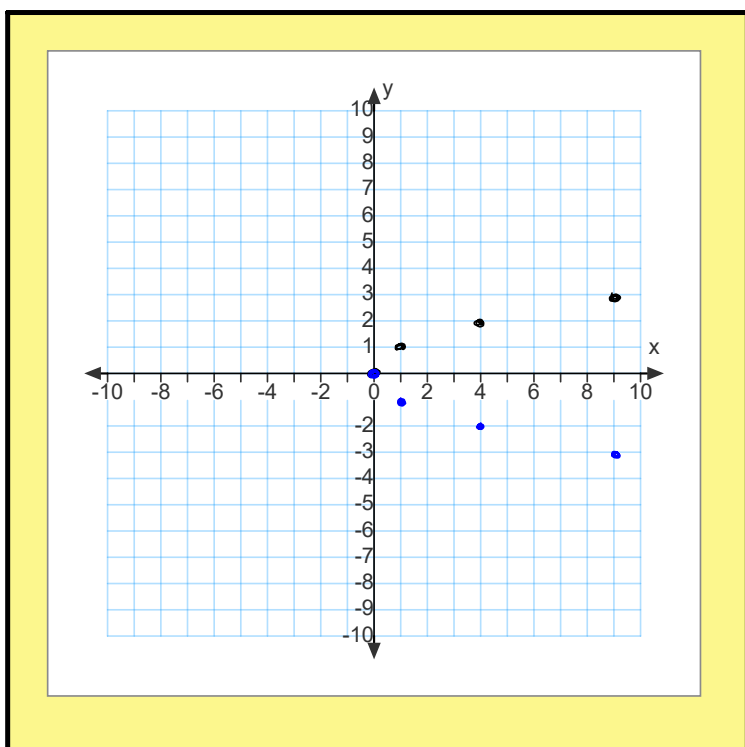
affects
X coord

affects
y coord

affects y-coord

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

$$y = \sqrt{x-a}$$



On your calculator, graph

$$\underline{y = \sqrt{x}}$$

$$\underline{y = -\sqrt{x}}$$

What does the negative in front of the square root do to the graph?

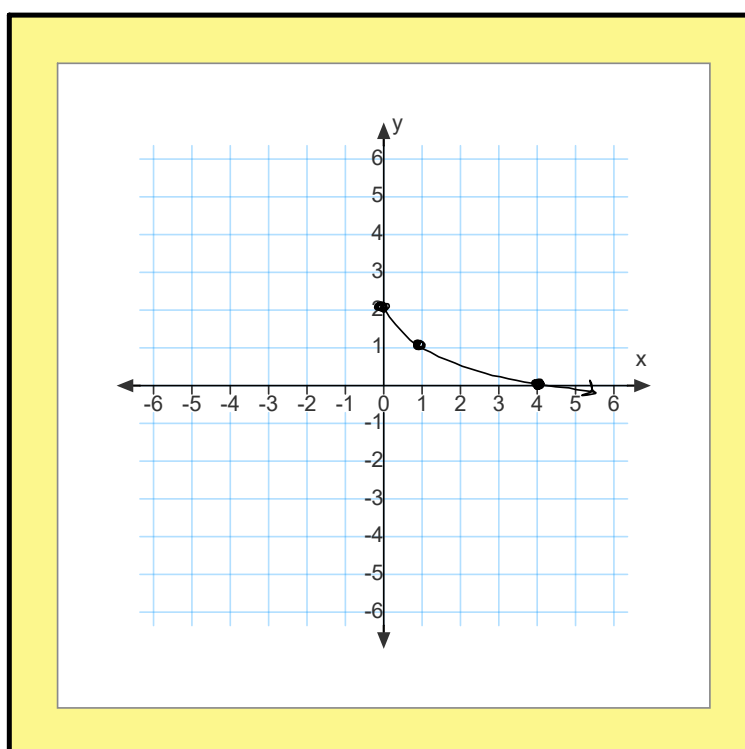
Summary

$$y = \sqrt{x}$$

$$y = -\sqrt{x}$$

A negative in front of the square root _____

The reference points we will use for graphing the square root function by hand are: $(0, 0)$, $(1, 1)$, $(4, 2)$.



Graph by hand

$$y = \sqrt{x-3} - 5$$

X	Y	$x+3$	$y-5$
0	0		
1	1	3	-5
4	2	4	-4
		7	-3

$$y = -\sqrt{x} + 2$$

X	Y	$-1 \cdot y$	$y+2$
0	0		
1	1		
4	2		

X	$-1y$
0	0
1	-1
4	-2

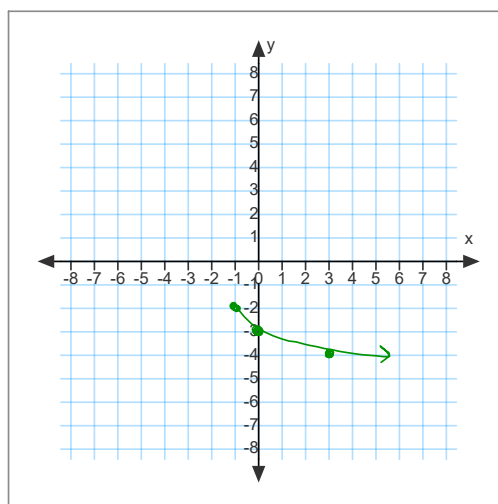
X	$y+2$
0	2
1	1
4	0

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

Handwritten annotations for the equation above:
A red arrow points to the constant term -2 .
A green arrow points from $x-1$ to the $+1$ inside the radical.
A green arrow points from $y-2$ to the -2 outside the radical.

x	y
0	0
1	-1
4	-2

x-1	y-2
-1	-2
0	-3
3	-4



Now try graphing
on your calculator:

$$y = \sqrt[3]{x}$$

x	y
-1	-1
0	0
1	1



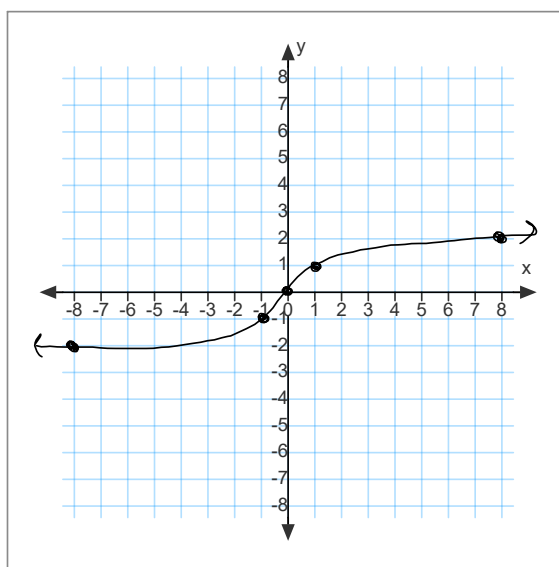
would the graph of $y = 2\sqrt[3]{x}$ be like? Why?

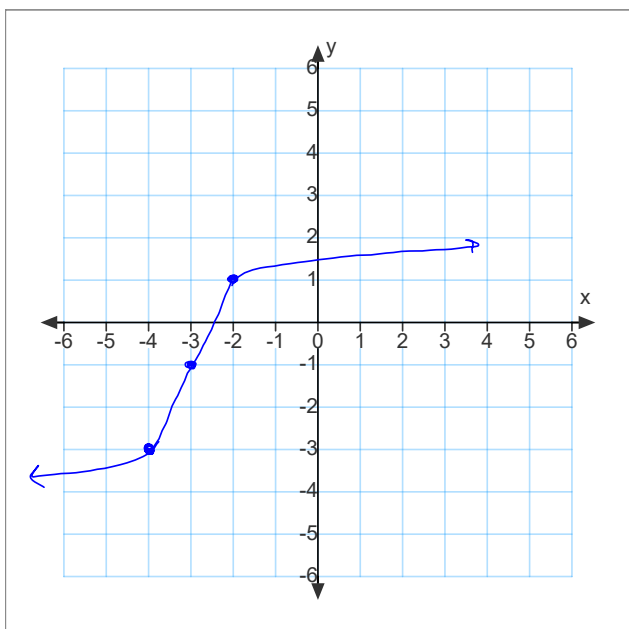


The reference points we use
for the cube root graph are:

$(0, 0)$, $(1, 1)$, $(-1, -1)$

Same as cubic graph but the
's' shape is sideways!





$$y = 2 \sqrt[3]{x + 3} - 1$$

↗ $2y$ ↑ $x-3$ ↑ $y-1$

x	y
-1	-1
0	0
1	1

$x-3$	$2y$
-4	-2
-3	0
-2	2

x	y-1
-4	-3
-3	-1
-2	1

HOMework

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