Solving Radical Equations

Springboard 25.2

2.28.17

Warm-up

Evaluate

1) $2^4 =$

2)$(x-3)^2=$

3)$(2-x)^2=$

4) $(-3)^2 =$

5)$(-2)^3 =$

6) factor $(x^2 - 8x + 12)$

Make up tests, quizzes and assignments due Friday. Zeroes become permanent after that.

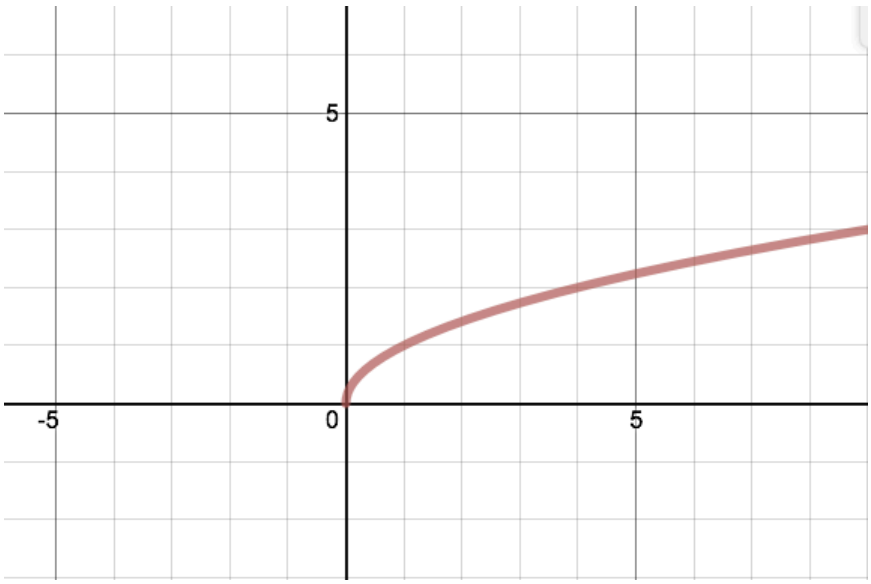
I Try:

Here is a set of data points:
(1,2), (3,4), (5,6), (1,5)
What is the domain?
What is the range?

We Try:

Here is a set of data points:
(12,2), (-3,41), (5,-6), (71,5)
What is the domain?
What is the range?

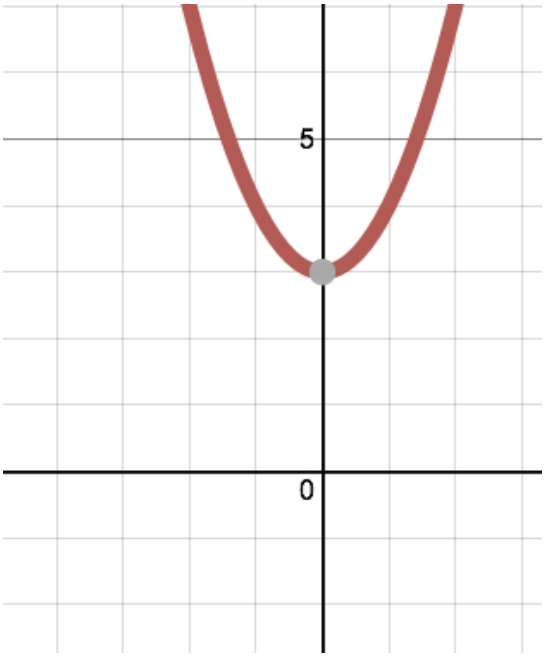
I Try:



Identify some data points:
Find the domain and range:

We Try:

Identify some data points:
Find the domain and range:



Solve for x

$$x = (x + 12)^{\frac{1}{2}}$$

Isolate the Radical	$x = (x + 12)^{\frac{1}{2}}$
Raise both sides of the equation to the power	$x^2 = \left((x + 12)^{\frac{1}{2}}\right)^2$
Simplify	$x^2 = x + 12$ $x^2 - x - 12 = 0$ $(x - 4)(x + 3)$ $x = 4, -3$
Check!	$4 = (4 + 12)^{\frac{1}{2}}$ $\quad -3 = (-3 + 12)^{\frac{1}{2}}$ $4 = 16^{\frac{1}{2}}$ $\quad -3 = (9)^{\frac{1}{2}}$ $4 = 4$ $\quad -3 \neq 3$ x=4

Solve for x.

$\sqrt[3]{x} - 5 = 0$

Isolate the Radical	$\sqrt[3]{x} - 5 = 0$ $\sqrt[3]{x} = 5$
Raise both sides of the equation to the power	$\left(\sqrt[3]{x}\right)^3 = 5^3$
Simplify	x=125
Check!	$\sqrt[3]{125} = 5$ 5=5

I try:

Solve for x

1) $3\sqrt[4]{x-2}=6$

Isolate the Radical	$3\sqrt[4]{x-2}=6$ $\sqrt[4]{x-2}=2$
Raise both sides of the equation to the power	$\left(\sqrt[4]{x-2}\right)^4=2^4$
Simplify	x-2=16 x=18
Check!	$3\sqrt[4]{18-2}=6$ $3\sqrt[4]{16}=6$ $3\left(\sqrt[4]{2^4}\right)=6$ 3(2)=6 6=6

We Try:
Solve for x.
$\sqrt{2m-6} = \sqrt{3m-14}$

Isolate the Radical	
Raise both sides of the equation to the power	
Simplify	
Check!	

Solve for x

$\sqrt{x+18}+2=x$

Isolate the Radical	$\sqrt{x+18}=x-2$
Raise both sides of the equation to the power	
Simplify	
Check!	

You Try with your partner:

1) $3(x+6)^{\frac{1}{2}} = 9$

2) $6\sqrt{x+10} = 42$

You try SOlO:

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

Exit Ticket:
Solve for x. Check your answer.

1) $3\sqrt{x+6} = 9$

2) Identify the domain and range of the set of data.
(1,3),(2,5),(2,6),(-2,5)

3) What is the domain and range of this graph?