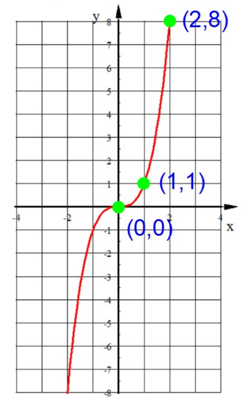
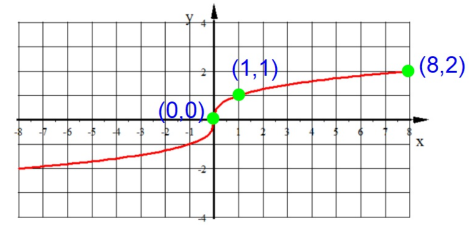
Graph of Cube Root Functions:

Graph of $y = x^3$



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



The cube root function is the inverse of the cubic function. Therefore, the coordinates on the cube root function are just the corresponding coordinates of the cubic function where the x and y coordinates are switched.

Domain and Range of Cubic and Cube Root Functions:

Domain: $(-\infty,\infty)$

For Both functions

Range: $(-\infty,\infty)$

We won't spend any more time on graphs of cubic and cube root functions but now you've seen them so if you run across them in the future it won't be the first time!

Sec 5-4: Solving Radical Equations

A radical equation involves either:

a variable under a radical
or
a variable raised to a fractional exponent

a fractional exponent means a radical!

Example 1 Try it! top of page 126 in Student Companion 1a and 1b.

a. $\sqrt{x-2}+3=5$

$\quad\quad\;\; -3 \quad -3$

move the 3 first

$\left(\sqrt{x-2}\right)^2=(2)^2$

now square both sides to eliminate the radical

$x-2=4$

$\;\;+2 \quad +2$

finish solving for x

$x=6$

b. $\left(\sqrt[3]{x-1}\right)^3=(2)^3$

cube both sides to eliminate the radical

$x-1=8$

$\;\;+1 \quad +1$

finish solving for x

$\boxed{x=9}$

Answer Habits of mind page 126 in Student Companion.

Reese solved the equation in 1(a) by first squaring both sides. Is this an appropriate first step? Why or why not?

This method would work but it would take many more steps to eventually solve.

If you chose to do it this way your first step would require you to expand the left side.....correctly!

a. $\left(\sqrt{x-2}+3\right)^2=(5)^2$

	$\sqrt{x-2}$	$+3$
$\sqrt{x-2}$	$x-2$	$3\sqrt{x-2}$
$+3$	$3\sqrt{x-2}$	9

after combining like terms you would get:

$x+7+6\sqrt{x-2}=5$

as you can see this wouldn't eliminate the radical and it would make the equation even more complicated.

You could keep solving and eventually get the correct answer but it would take quite a few more steps.

The next hwk is below if you want to get a start on it.

Due date is still to be determined.

Hwk #5 Sec 5-4

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Problems 12, 23, 24, 29, 30, 34, 38