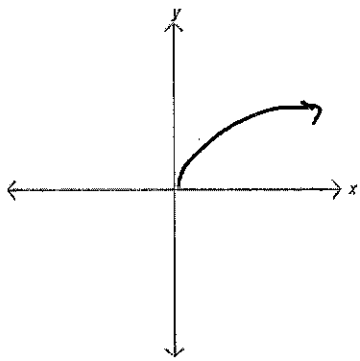
Graphing with Technology

Login to your computer and go to: www.desmos.com/calculator

1) **Square Root Functions:** Start by graphing the functions:

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



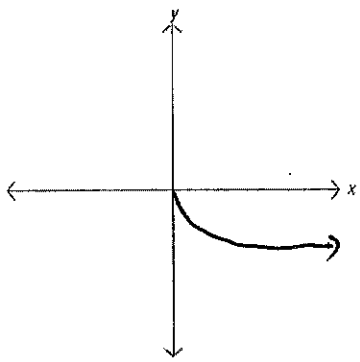
2a) Describe the domain of this graph.

$x \geq 0$

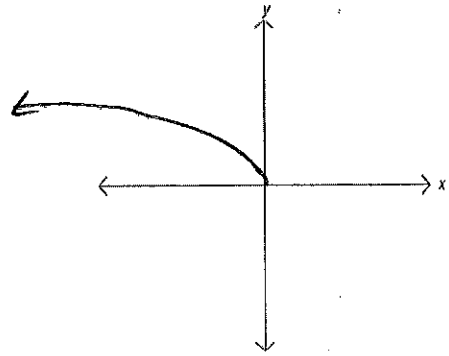
2b) Why are there no negative x or y values?

you can't take the square root of a negative number

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



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



4) What does a coefficient of (-1) do to the graph of a square root function?

it flips the graph upside down (reflects over the x-axis)

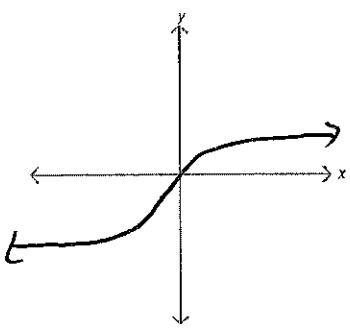
5) What does a (-1) inside the radical do to the graph of a square root function?

it flips the graph to the left (reflects over the y-axis)

6) **Cube Root Function:**

Now graph the function:

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

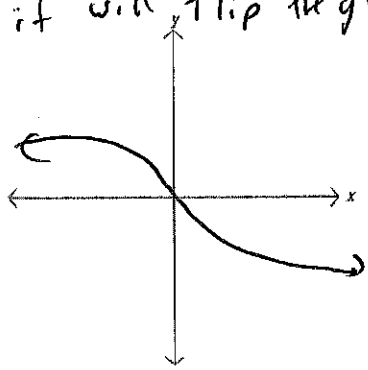


Predict:

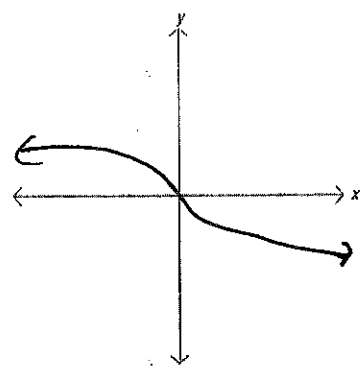
What do you think the graph of f(x) = $-\sqrt[3]{x}$ will look like?

Draw your sketch below:

it will flip the graph!



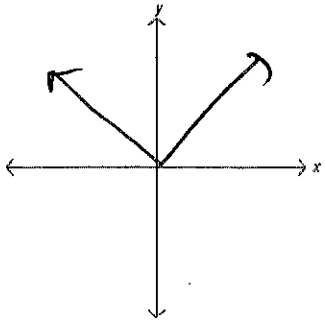
Then, use your calculator on Desmos to graph the cube root function and copy the graph below



7) What does a coefficient of (-1) do to the graph of a cube root function?

it flips the graph (reflection over the x-axis)

8) **Absolute Value Functions:** Graph: f(x) = $|x|$



a) Describe the range of this graph.

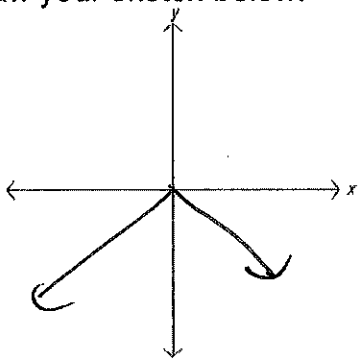
$y \geq 0$

b) Why are there no negative y values?

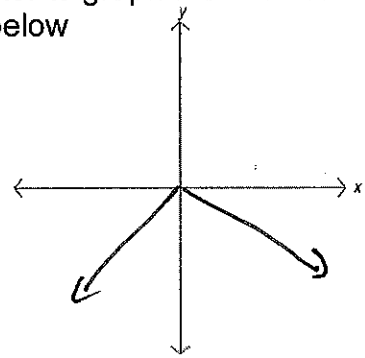
absolute value is always a positive number

9) **Predict:** What do you think the graph of f(x) = $-|x|$ will look like? upside down V

Draw your sketch below:



Use your calculator to graph the function and copy the graph below



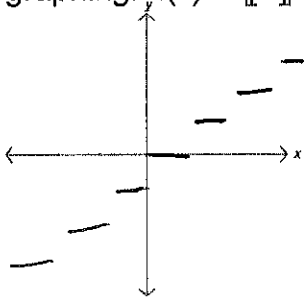
10) What does a coefficient of (-1) do to the graph of an absolute value function?

it flips the graph upside down (reflection over the x-axis)

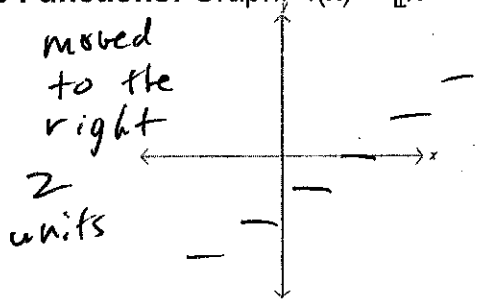
STOP HERE! WE WILL WORK THROUGH THESE FINAL PROBLEMS TOGETHER

11) **Step Functions:** Finish by graphing: f(x) = $[\![x]\!]$

** In Desmos, click the **function button** and then choose the function, **floor.**



12) **Step Functions:** Graph: f(x) = $[\![x-2]\!]$

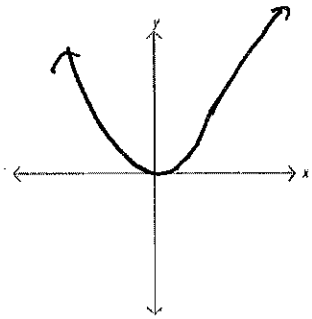


Piece Wise Functions:

Graph: f(x) = $\left.\begin{matrix} y = 2x, \ when\ x > 2 \\ y = x^2, \ when\ x < 2 \end{matrix}\right\}$

Sketch the graph below:

* In Desmos, to type in the restrictions, use {⬚}. For example, $\{x < 2\}$



Piece Wise Functions:

Sketch the graph below:

f(x) = $\left.\begin{matrix} y = \frac{1}{2}x + 3, \ when\ x > 6 \\ y = -\frac{1}{2}x - 2, \ when\ x < 0 \end{matrix}\right\}$