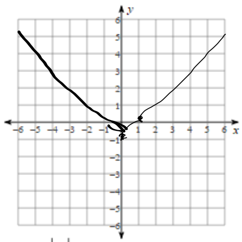
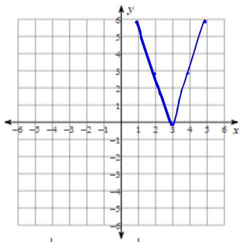
CH 4 Graphing Absolute Value Review P

Graph each equation.

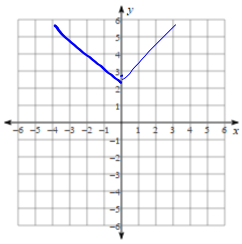
1) $y = |x| - 1$



2) $y = 3|x - 3|$

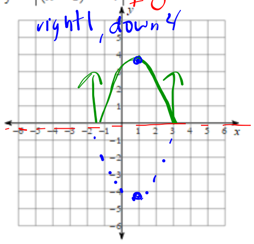


3) $y = |x| + 3$

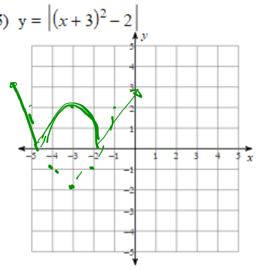


4) $y = |(x-1)^2 - 4|$ + 0

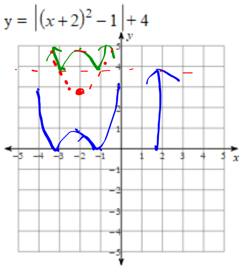
right 1, down 4



5) $y = |(x+3)^2 - 2|$



6) $y = |(x+2)^2 - 1| + 4$



4. 6 Bernie's Bikes

A Solidify Understanding Task

Bernie owns *Bernie's Bike Shop* and is advertising his company by taking his logo and placing it around town on different-sized signs. After creating a few signs, he noticed a relationship between the amount of ink he needs for his logo and the size of the sign.

1. The table below represents some of the signs Bernie has created and the relationship between the amount of ink needed versus the size of the sign. Complete the information below to help Bernie see this relationship (don't forget to label your graph).

Length of sign (in feet)	Ink needed (in ounces)
3	9
4	16
2	4
15	225
x	

Function: **Domain:** **Range:**

Graph:

2. Using question 1, complete the information below for the ***inverse*** of this function (don't forget to label your graph).

Function: **Domain:** **Range:**

Graph:

3. Explain in words what the inverse function represents.

Part II

Lesson 4.6 Starter Graph 8-11

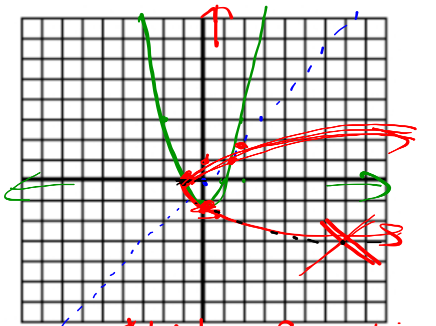
Determine the inverse rule for each function, then sketch the graphs and state the domain and range for both the original function and it's inverse.
*switch & solve

8. $f(x) = x^2 - 1$; y $f^{-1}(x) = \sqrt{x+1}$

Domain: $(-\infty, \infty)$ Domain: $(-1, \infty)$

Range: $[-1, \infty)$ Range: $[0, \infty)$

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

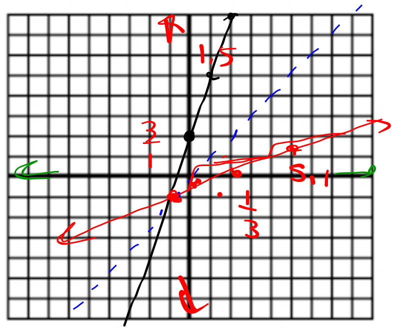


9. $g(x) = 3x + 2$; y $g^{-1}(x) = \frac{x}{3} - \frac{2}{3}$

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

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

$x = 3y + 2$
$-2 \quad -2$
$\frac{x-2}{3} = \frac{3y}{3}$
$y = \frac{x}{3} - \frac{2}{3}$ ✓

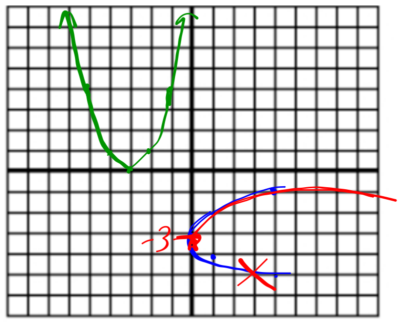


10. $f(x) = (x+3)^2$; y $f^{-1}(x) = \sqrt{x} - 3$

Domain: $(-\infty, \infty)$ Domain: $[0, \infty)$

Range: $[0, \infty)$ Range: $[-3, \infty)$

$\sqrt{x} = \sqrt{(y+3)^2}$
$\sqrt{x} = y + 3$
$-3 \quad -3$
$y = \sqrt{x} - 3$ ✓



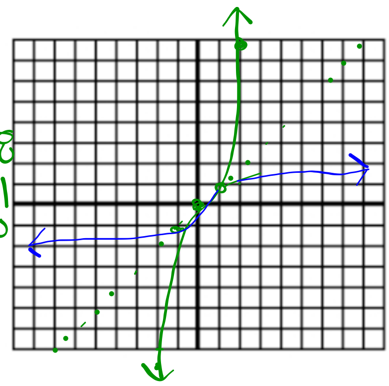
11. $f(x) = x^3$; y $f^{-1}(x) = \sqrt[3]{x}$

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

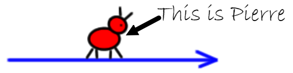
Range: $(-\infty, \infty)$ Range: $(-\infty, \infty)$

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

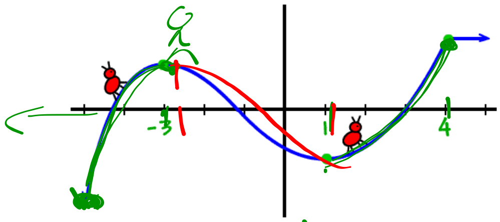
$\cdot$	x^3
-2	$(-2)^3 = -8$
-1	$(-1)^3 = -1$
0	$(0)^3 = 0$
1	$(1)^3 = 1$
2	$2^3 = 8$



Pierre only crawls from left to right (like we read):



If Pierre is climbing uphill, then the graph is increasing:



So, our graph is increasing on

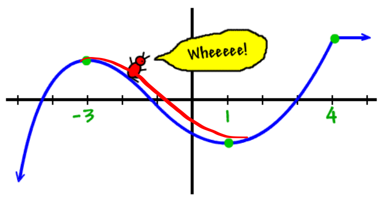
or

$(-\infty, -3) \cup (1, 4)$

(We use interval notation with **X VALUES**!)

Summary: Use () when talking about increasing and decreasing intervals.

If Pierre is going downhill, then the graph is decreasing:



So, our graph is decreasing on

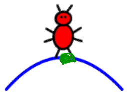
$(-3, 1)$ ✓

Notice that I'm not using the endpoints on these:

Like $[-3, 1]$ ✗

~~closed~~

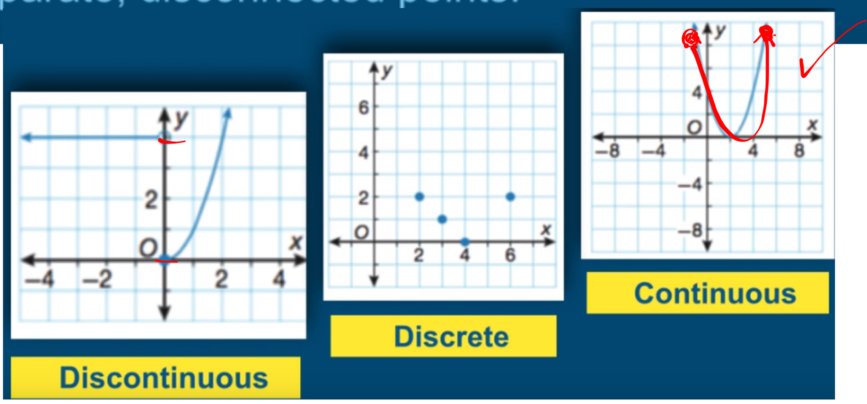
Think about it... When Pierre is standing right ON x = -3...



he's not going uphill or downhill. He's just standing there!

http://www.coolmath.com/precalculus-review-calculus-intro/precalculus-algebra/11-graphing-increasing-decreasing-02

- A continuous function is a function with a graph that has no gaps, jumps, or asymptotes.
- Any function that has gaps, jumps or asymptotes is considered a discontinuous function.
- A discrete function is a type of function made up of separate, disconnected points.



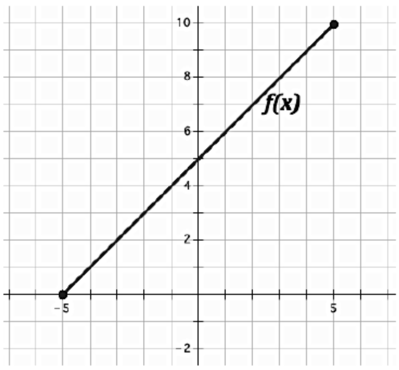
READY, SET, GO! Name Period Date

READY

Topic: Identifying Features of Functions

Given each representation of a function, determine the domain and range. Then indicate whether the function is discrete, continuous, or discontinuous and increasing, decreasing, or constant.

1.



Description of Function:

continuous

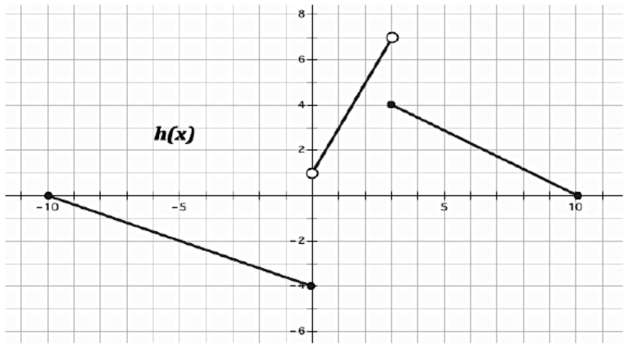
D:

R:

I

D:

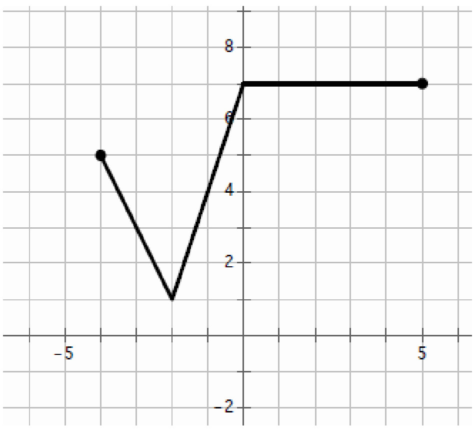
2.



Description of Function:

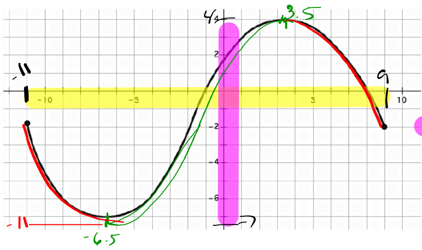
discontinuous

3.



Description of Function:

4.



Description of Function:

Continuous

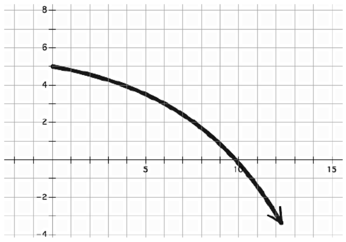
domain: [-11, 9]

Range: [-7, 4]

increasing: (-6.5, 3.5)

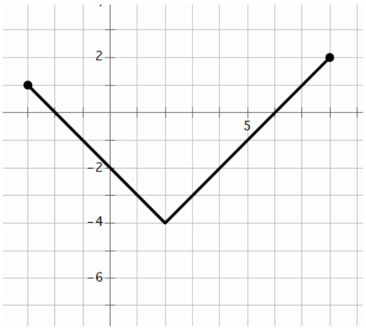
decreasing: (-11, -6.5) U (3.5, 9)

5.



Description of Function:

6.



Description of Function:

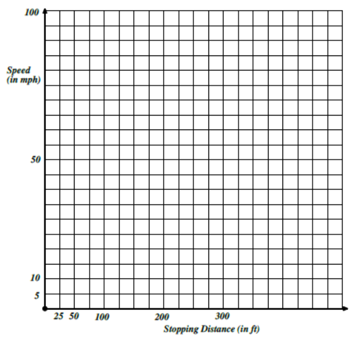
Topic: Square root functions

The speed limit for driving in a school zone is 20mph. That seems so slow if you're riding in a car. But have you ever wondered how quickly you could come to a complete stop going that speed (even if you had super quick reflexes)? It would take you over 13 feet! The **speed of a vehicle *s*** and the **stopping distance *d*** are related by the function $s(d) = \sqrt{30d}$.

Fill in the table of values for $s(d)$. (Round to nearest whole number.) Then graph $s(d)$ and answer the questions.

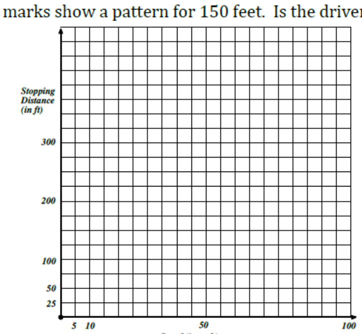
7.

d ft	$s(d)$ mph
25	
50	
100	
200	
300	



8. If you were a police officer investigating the site of an accident, you would be able to measure the length of the skid marks on the road and then approximate the speed of the driver. The driver swears he was sure he was going under 60 mph. The tire marks show a pattern for 150 feet. Is the driver's sense of his speed accurate? Justify your answer.

9. Use your answers in problem 8 to make a graph of stopping distance as a function of speed.



10. How are the two graphs related?

GO

Topic: Solving literal equations for a given variable

Solve each equation for the indicated variable.

11. $C = 2\pi r$; Solve for r.

12. $A = \pi r^2$; Solve for r.

13. $V = \pi r^2 h$; Solve for h.

14. $V = \pi r^2 h$; Solve for r.

$$\frac{V}{\pi h} = \frac{\cancel{\pi} r^2 \cancel{h}}{\pi \quad h}$$

$$\boxed{\sqrt{\frac{V}{\pi h}}} = \sqrt{r^{\cancel{2}}}$$

15. $V = e^3$; Solve for e.

16. $A = \frac{b_1 + b_2}{2} h$; Solve for h