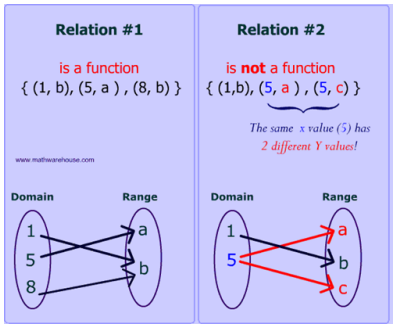
Vertical Line: Function or NOT?

A function: Any relation (set of values or equation) where any x value can only have **one possible value of y.**



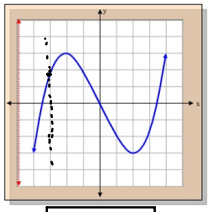
Dec 14-11:35 AM

Relations and Functions

You can use the **vertical line test** to determine whether a relation is a function.

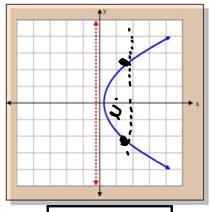
Vertical Line Test

If no vertical line intersects a graph in more than one point, the graph represents a function.



A function

If some vertical line intercepts a graph in two or more points, the graph does not represent a function.



Not a function

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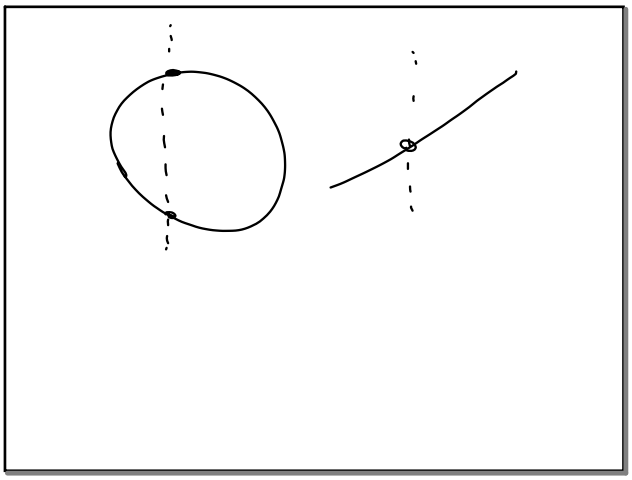
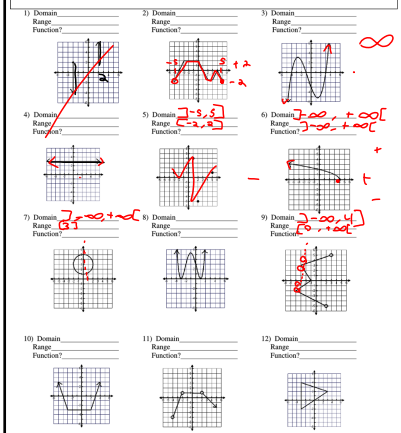


Feb 5-3:01 PM

State whether the graph is a function.

Give the interval of the domain if it is a function: Both with brackets and inequalities.

You do not have to give the Range



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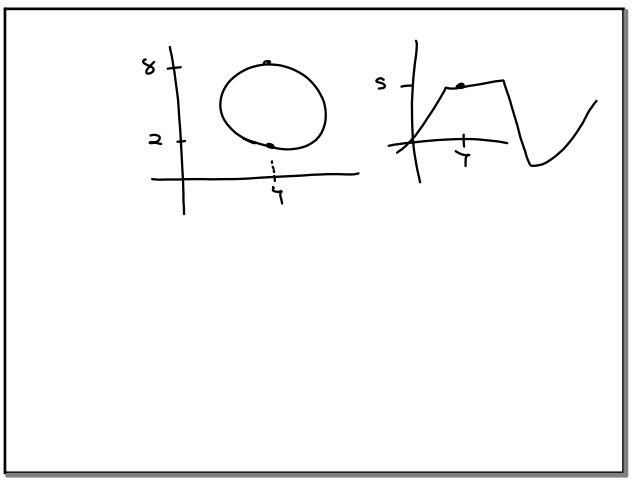


Feb 5-3:05 PM

Introduction to Functions

Reading Graphs: Understanding Intervals

When we read a graph - we read it from left to right →.

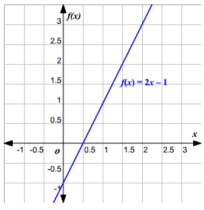
We will be describing graphs and we use intervals **(along the x-axis)** to help us explain what is happening.

A) Below the function is always **increasing** (from left to right). When we say **always** we mean **from negative infinity (-∞) to (+∞).**

In math the notation for describing this interval is written **]-∞ , ∞[** or **-∞ < x < ∞**

This is pronounced **negative infinity, not included to positive infinity not included** or **negative infinity is less than x which is less than infinity or x is between - infinity and + infinity.**

Highlight all of the x-axis including the arrows: This is the interval where the function is increasing .



Dec 13-1:24 PM

Intervals

$]-\infty, +\infty[$

Inequality

$-\infty < x < +\infty$

$<$ = Not inc

$\leq$ = inc

Feb 5-3:26 PM

Feb 5-3:28 PM

Let's review some important symbols

Less Than	<
Less Than or Equal To	≤
Greater Than	>
Greather Than or Equal To	≥

Lots of Snow!

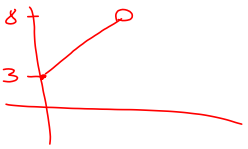
Did you hear that? The weather forecaster just said there is going to be a snowstorm with at least 3 but less than 8 cm of snow! So, what are the different amounts of snow that we could expect based on those numbers? Well, go get your snow shovel ready and then let's find out.

Use interval notation, where x is the amount of snow, to describe the weather forecast

Snow forecast: Interval notation

a) Using brackets $[3, 8[$

b) Using inequalities $3 \leq x < 8$



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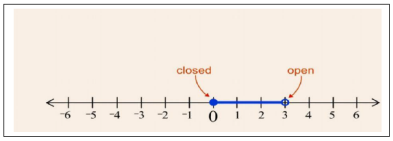
Some graphs use dots: A solid or closed dot is included in the interval and an open dot is excluded or not included.



The interval is [0 , 3[or $0 \leq x < 3$

Dec 13-1:32 PM

Some Graphs are more interesting and change

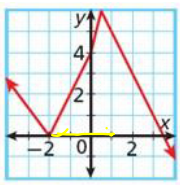
We need to look at the function over different intervals.

Below indicate the interval when the function is increasing (highlight the x axis when this is true).

The function is increasing....

Math notation: **[-2, 0.5]** or $-2 \leq x \leq 0.5$.

We would say the function is increasing from **-2 included to 0.5 included.**



Dec 13-1:35 PM

i) What is the interval of the function when y = x2 ?

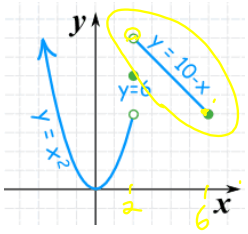
Brackets: $]-\infty, 2[$

Inequalities: $-\infty < x < 2$

ii) What is the interval of the function when y = 10 - x ?

Brackets: $]2, 6]$

Inequalities: $2 < x \leq 6$



Dec 13-1:37 PM

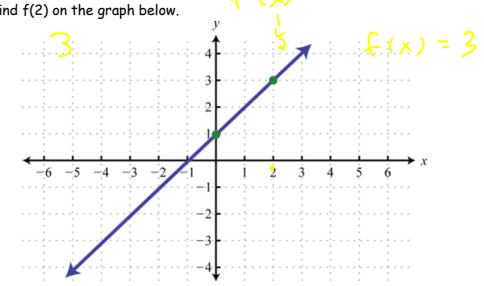
Introduction to Functions

Reading Graphs

When asked to find a value on a graph, and show work – use a highlighter.

Let's do an example together.

Ex. Find f(2) on the graph below.



A) When asked to find f(2) you must find when x = 2, and show that at that point y = 3

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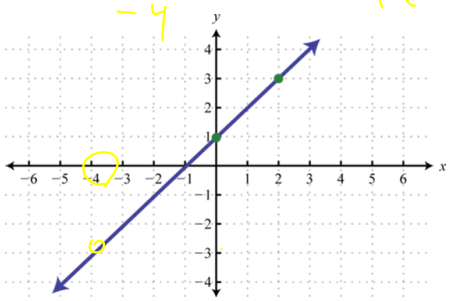
Ex. What is x when f(x) = -3 on the graph below.



B) When asked to find the value of x when y = -3, show that x = -2

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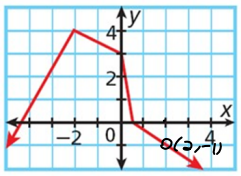
Solve the following problems using a highlighter. Then write your answer.

1. Find f(2) : -1

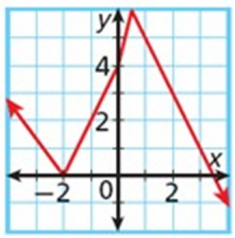
f(x)

y= -1



2. Find f(-1):

y=_____



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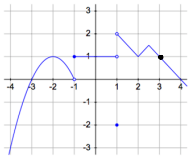
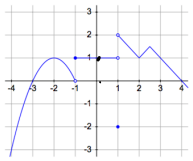
3. Find f(3):

y= 1



4. Find f(0)

y= 1



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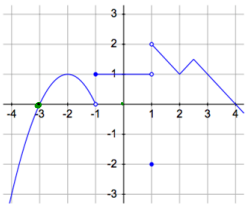
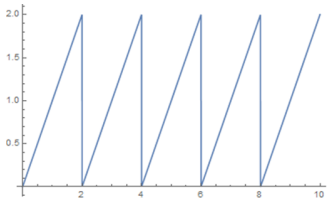
5. Find f(-3)

y= 0



6. Find f(3) :

y= _____



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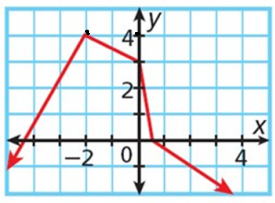
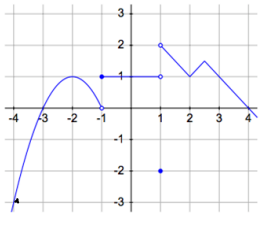
7. Find x when y = 4

x= -2



8. Find x when y = -3

x= -4



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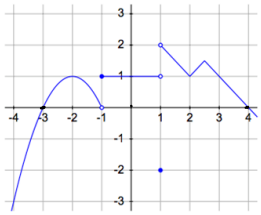
9. Find x when y = 0

(there are 2 answers)

x = −3 , 4



Bonus Question:

Why doesn't x = -1 when y = 0?

Explain:

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Feb 1-10:29 AM