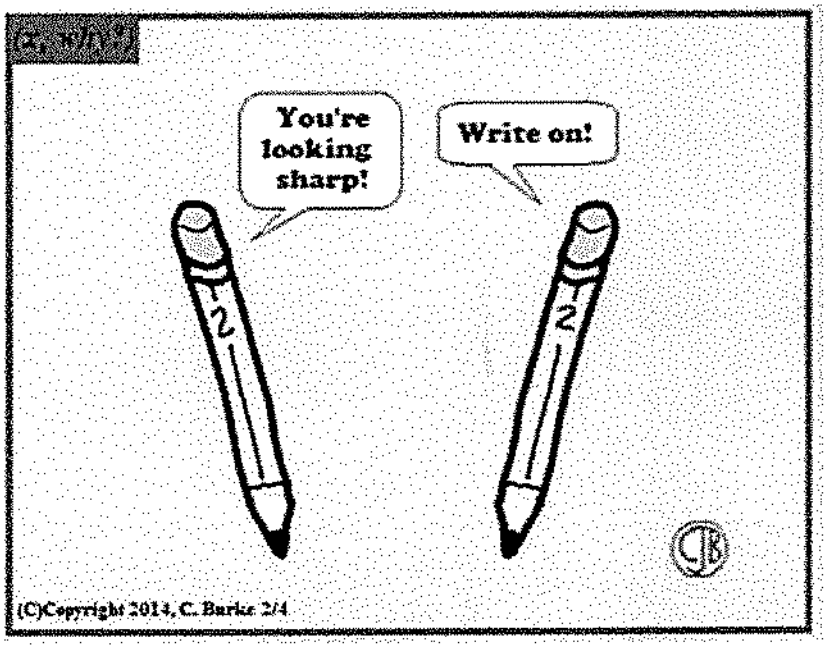
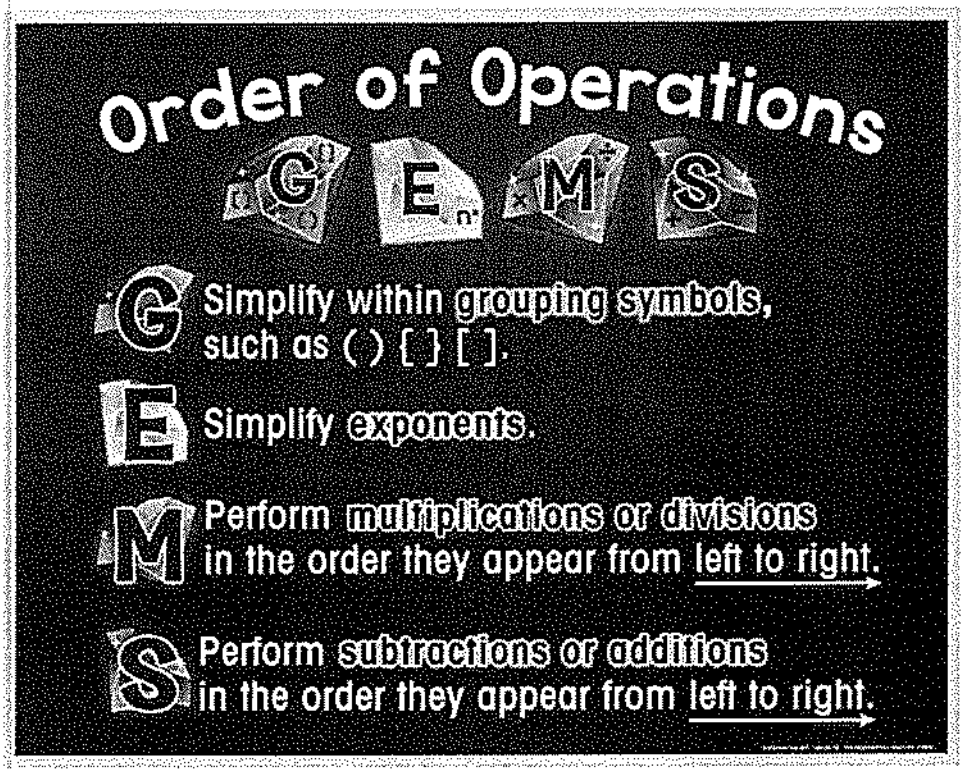
Notes

Domain and Range *and Order of Operations*



*See printout.

Order of Operations



P
E
MD
AS

Simplify.

L → R

1) $8 \div 4 \cdot 2$

$2 \cdot 2$

$\boxed{4}$

2) $(-6 \div 6)^3$

$(-1)^3$

$(-1)(-1)(-1)$

$= \boxed{-1}$

Simplify.

3) $4-2|3^2-16|$

$4-2|9-16|$

$4-2|-7|$

$4-2(7)$

$4-14$

$\boxed{-10}$

4) $5(-5+6)\cdot 6^2$

$5(1)\cdot 6^2$

$5(1)\cdot 36$

$5\cdot 36$

$\boxed{180}$

36×5

Simplify.

5) $-4-[2+4(-6)-4-|2^2-5\cdot 2|]$

$-4-[2+4(-6)-4-|4-10|]$

$-4-[2+4(-6)-4-|-6|]$

$-4-[2+4(-6)-4-(6)]$

$-4-[2-24-4-6]$

$-4-[-22-4-6]$

$-4-[-32]$

$-4+32$

$\boxed{28}$

6) $\dfrac{-9\cdot 2-(3-6)}{1-(-2+1)-(-3)}$

$\dfrac{-9\cdot 2+(+3)}{1+(+1)+(+3)}$

$\dfrac{-18+3}{1+1+3}$

$\dfrac{-15}{5}$

$\boxed{-3}$

7) $-5^2 + (6 \div 3(2))$ L→R

$-5^2 + (2(2))$

$-5^2 + 4$

$-1 \cdot 5^2 + 4$

$-1 \cdot 25 + 4$

$-25 + 4$

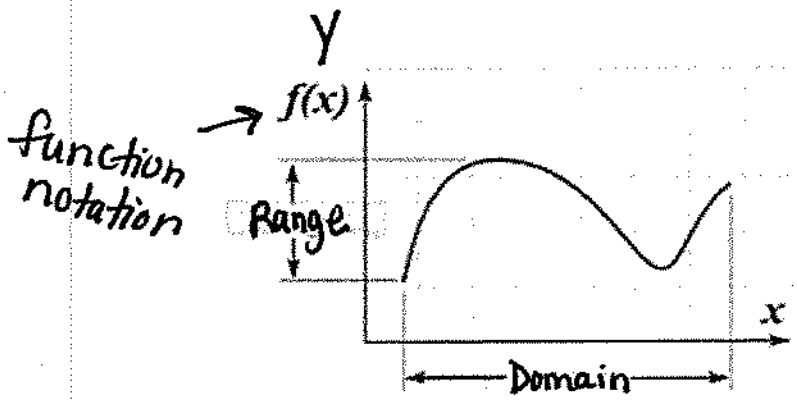
$\boxed{-21}$

study for quiz!!!

$(-5)^2 = 25$

$-5^2 = -25$

Reading a Graph:

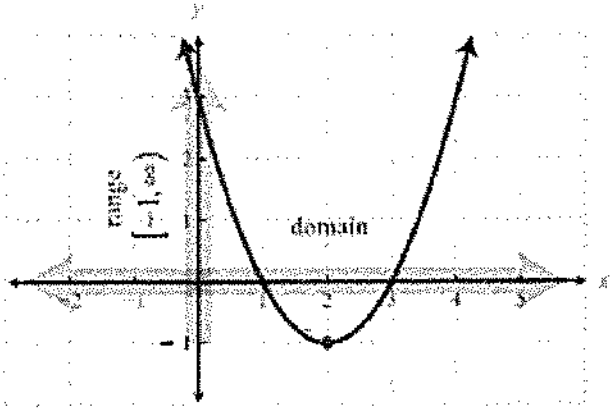


domain - the set of all possible **x-values** that make the function work (Read Left to right.)

range - the set of all possible resulting **y-values** (Read up and down)

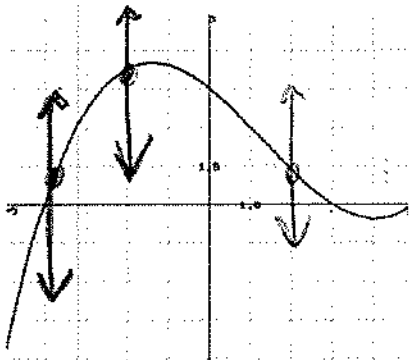
Questions to consider before finding domain and range...

- Does the graph open "left/right" forever?
- Does the graph open "up/down" forever?
- Can you trace the graph without lifting your pencil?



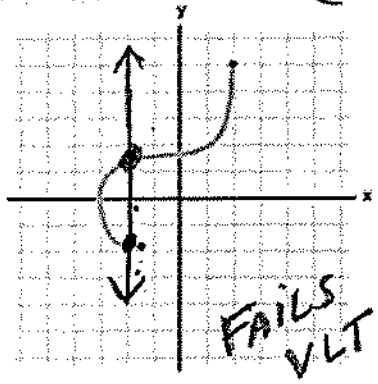
Definition of a function: A function from a set D to a set R is a rule that assigns to every element in D a unique element in R. The set D of all input values is the ~~dodin~~ domain of the function and the set R of output values is the range of the function.

A function must pass the vertical line test: (VLT) → X-values do not repeat



Passes VLT

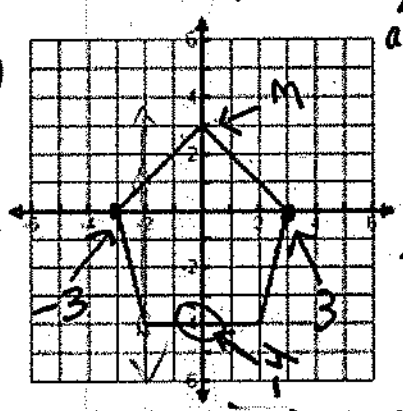
Function



Not a function

Is the graph a function? State yes or no.
State the domain and range in both notations.

1)



Function? no
fails VLT

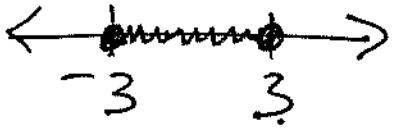
Set notation: Domain $\{x \mid -3 \leq x \leq 3\}$

Range $\{y \mid -4 \leq y \leq 3\}$

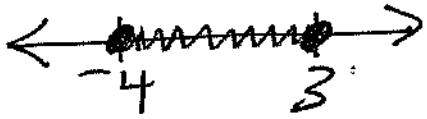
Interval notation: Domain $[-3, 3]$

Range $[-4, 3]$

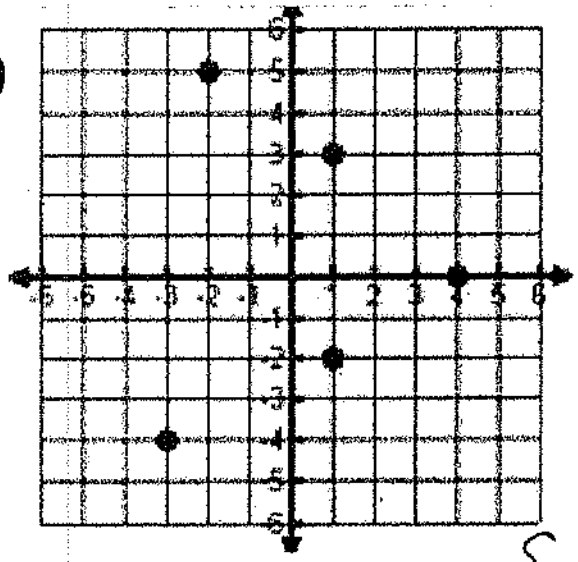
D:



R:



2)



Function? no, fails VLT

★ Set notation: Domain $\{x \mid x = -3, -2, 1, 4\}$

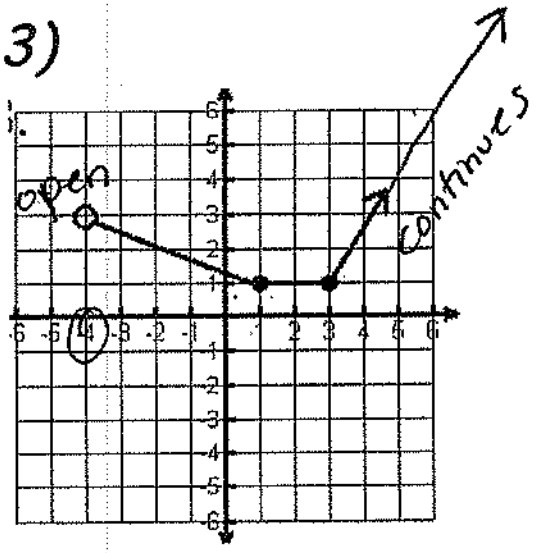
Range $\{y \mid y = -4, -2, 0, 3, 5\}$

Interval notation: Domain $[-3] \cup [-2] \cup [1] \cup [4]$

Range $[-4] \cup [-2] \cup [0] \cup [3] \cup [5]$

• don't prefer to ask here

3)



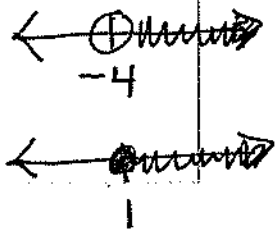
Function? Yes, passes VLT

Set notation: Domain $\{x \mid x > -4\}$ (open)

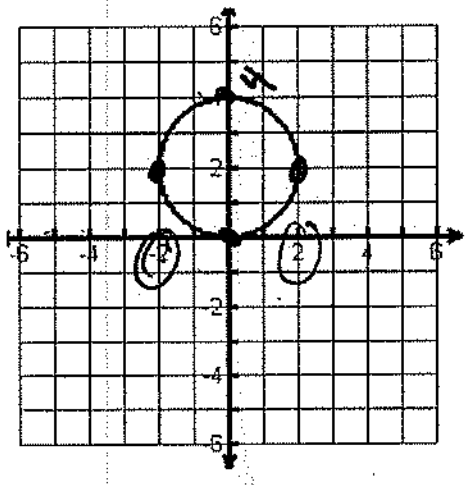
Range $\{y \mid y \geq 1\}$

Interval notation: Domain $(-4, \infty)$

Range $[1, \infty)$



4)



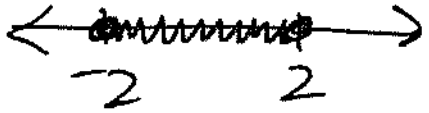
Function? no
fails VLT

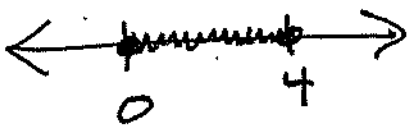
Set notation: Domain $\{x \mid -2 \leq x \leq 2\}$

Range $\{y \mid 0 \leq y \leq 4\}$

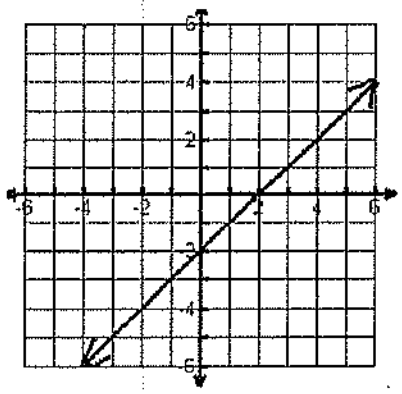
Interval notation: Domain $[-2, 2]$

Range $[0, 4]$

D: 

R: 

5)



Function? Yes, passes VLT

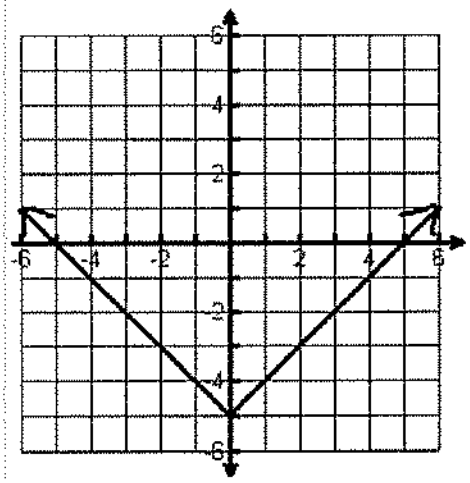
Set notation: Domain $\{x \mid x \in \mathbb{R}\}$

Range $\{y \mid y \in \mathbb{R}\}$

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

Range $(-\infty, \infty)$

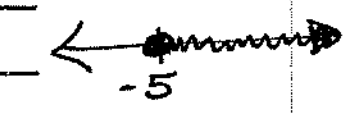
6)



Function? Yes, passes VLT

Set notation: Domain $\{x \mid x \in R\}$

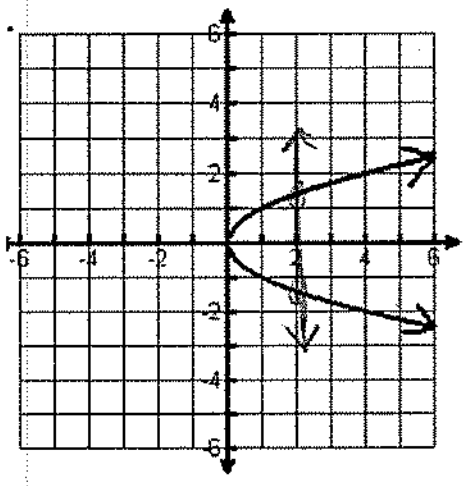
Range $\{y \mid y \geq -5\}$



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

Range $[-5, \infty)$

7)



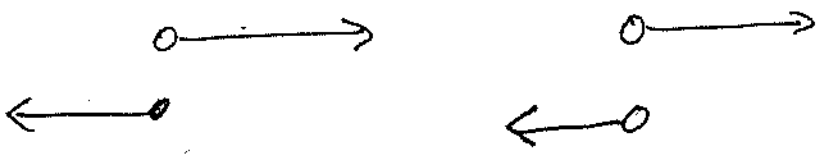
Function? No, fails VLT

Set notation: Domain $\{x \mid x \geq 0\}$

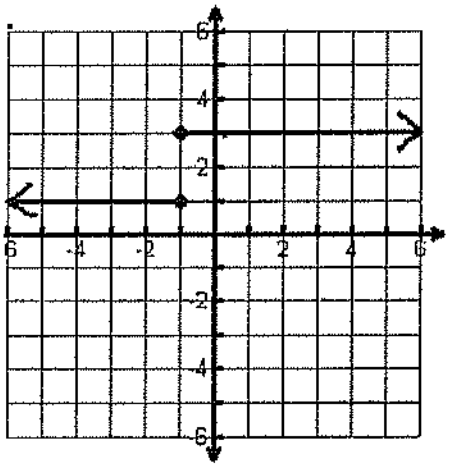
Range $\{y \mid y \in R\}$

Interval notation: Domain $[0, \infty)$

Range $(-\infty, \infty)$



8)



Function? no, fails VLT

✱ Set notation: Domain $\{x \mid x \in \mathbb{R}\}$

Range $\{y \mid y = 1, 3\}$

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

Range $[1] \cup [3]$

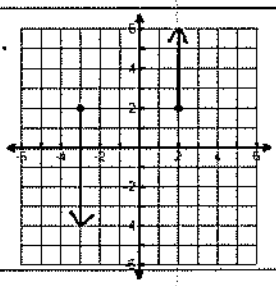
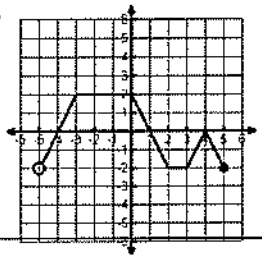
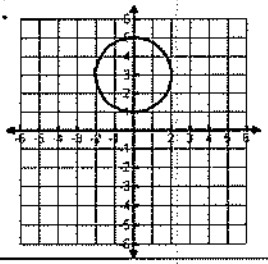
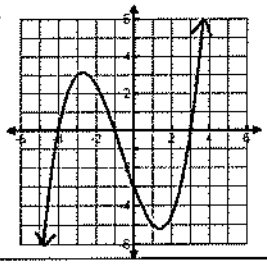
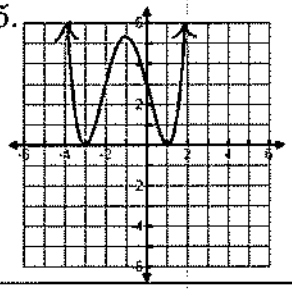
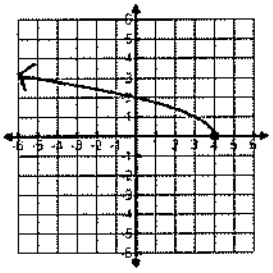
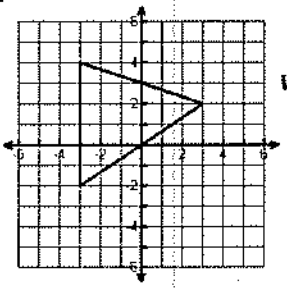
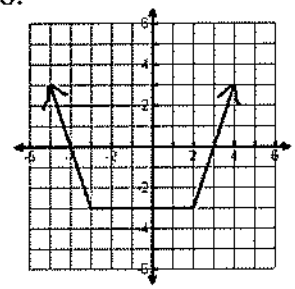
or

$[1, 1] \cup [3, 3]$

Domain & Range CLASS practice

State the domain and range for each graph and then tell if the graph is a function

Odds: Set notation/Evens: Interval notation notation.

1.  set	1. Domain $\{x \mid x = -3, 2\}$ Range $\{y \mid y \in R\}$ Function? no Fails VLT	2.  INT	2. Domain $\{x \mid -5 < x \leq 5\}$ Range $\{y \mid -2 \leq y \leq 2\}$ Function? yes, passes VLT
3.  set	3. Domain $\{x \mid -2 \leq x \leq 2\}$ Range $\{y \mid 1 \leq y \leq 5\}$ Function? no fails VLT	4.  INT	4. Domain $\{x \mid x \in R\}$ Range $\{y \mid y \in R\}$ Function? yes, passes VLT
5.  set	5. Domain $\{x \mid x \in R\}$ Range $\{y \mid y \geq 0\}$ Function? yes, passes VLT	6.  INT	6. Domain $\{x \mid x \leq 4\}$ Range $\{y \mid y \geq 0\}$ Function? yes, passes VLT
7.  set	7. Domain $\{x \mid -3 \leq x \leq 3\}$ Range $\{y \mid -2 \leq y \leq 4\}$ Function? no, fails VLT	8.  INT	8. Domain $\{x \mid x \in R\}$ Range $\{y \mid y \geq -3\}$ Function? yes, passes VLT