EXAM REVIEW 1st Semester

Unit 4: Functions

Name:
Hour:

Vocabulary:

Domain x-values

Range: y-values

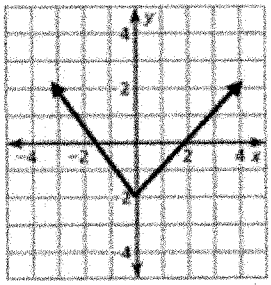
Function: x cannot repeat

Function Notation: $f(a) = b$ (a = x, b = y)

Practice Problems:

1. Find the domain and range of the function represented by the graph.

a.

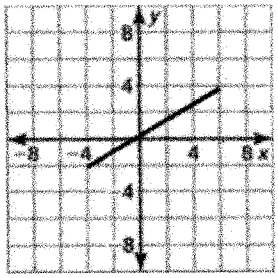


Domain: all real #'s

Range: $y \geq -2$

Function: yes

b.

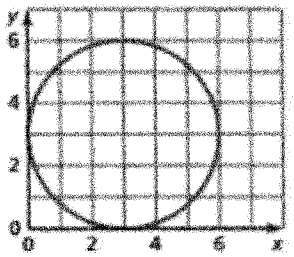


Domain: $-4 \leq x \leq 6$

Range: $-2 \leq y \leq 4$

Function: yes

c.



Domain: $0 \leq x \leq 6$

Range: $0 \leq y \leq 6$

Function: NO

2. Determine if the relation is a function: If not – explain why

a.

Input, x	8	4	2	4	8
Output, y	-4	-2	0	2	4

no, 4 repeats
8 repeats

b.

Input, x	0	2	4	6	8
Output, y	3	7	11	15	19

yes, no x-value repeats

c. (1,2), (2,3), (2,5)(4,8)

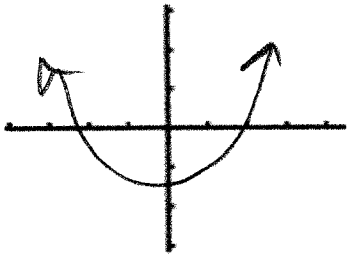
no, 2 repeats

3. Write Ordered Pairs that are:

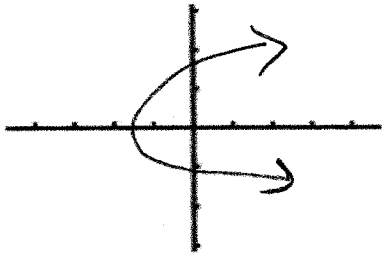
a. Function: (1,2), (2,3), (3,3)

Non-Function: (1,2), (2,3), (2,4)

b. Draw a Function graph:



c. Draw a NON Function graph



4. Solve the following:

a. $f(x) = 2x - 6$, solve for x when $f(x) = 10$

$10 = 2x - 6$
$+6 \quad +6$
$16 = 2x$
$x = 8$

b. Given $h(x) = -3x - 10$, find $h(-3)$

$-3(-3) - 10$
$9 - 10 = -1$

Vocabulary:

Average Rate of Change: $\frac{y_2 - y_1}{x_2 - x_1} = \frac{\Delta y}{\Delta x}$

Practice Problems:

5. Given the following data, find the average rate of change between:

a. $x = -1$ and $x = 1$

x	-1	0	1
s(x)	0	3	6

$\frac{6-0}{1+1} = \frac{6}{2} = 3$

b. $x = 2$ and $x = 4$

x	0	2	4
t(x)	8	4	0

$\frac{0-4}{4-2} = \frac{-4}{2} = -2$

Vocabulary:

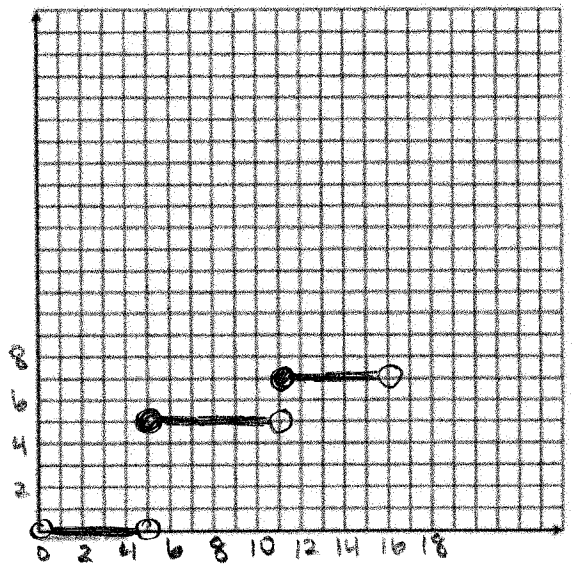
Piecewise Functions: a function in several pieces

Practice Problems:

6. Graph the following function and answer the questions below:

$$f(x) = \begin{cases} 0, & 0 < x < 5 \\ 5, & 5 \leq x < 11 \\ 7, & 11 \leq x < 16 \end{cases}$$

↑ y value ↑ x value



Evaluate:

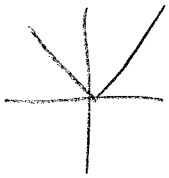
b. $f(5) = 5$

c. $f(12) = 7$

d. $f(0) =$ Undefined

Vocabulary:

Absolute Value function: $f(x) = |x|$



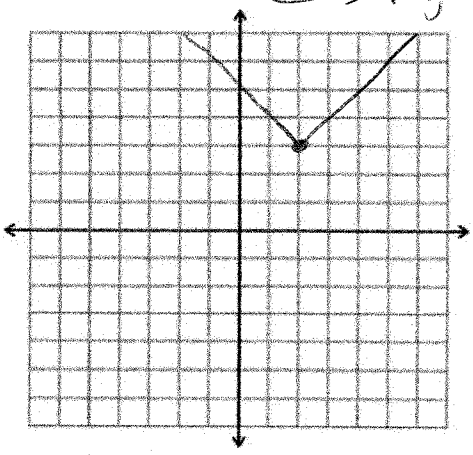
Patterns of shifting the graph:

x	y

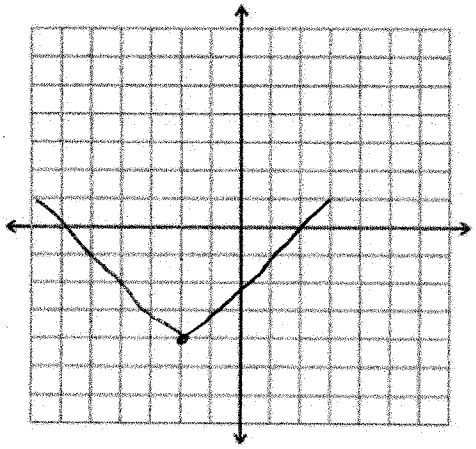
Practice Problems:

7. Graph the following equations

a. $g(x) = |x - 2| + 3$ → up 3, Right 2

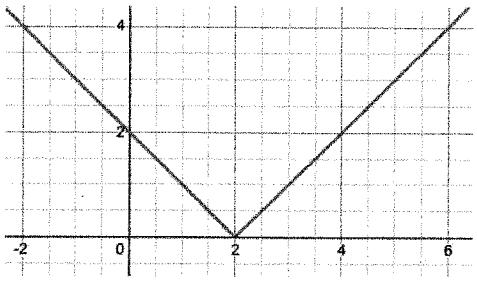


b. $f(x) = |x + 2| - 4$ → left 2, down 4



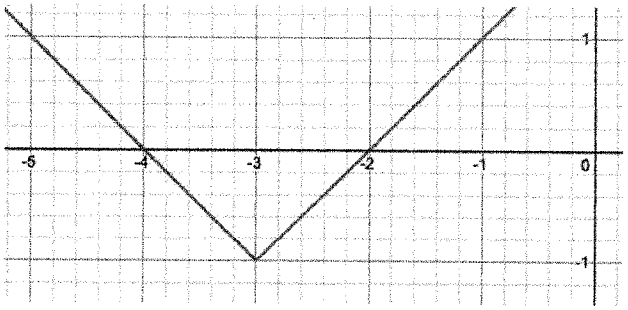
8. Write the equations for the following graphs:

a.



$f(x) = |x - 2|$

b.



$f(x) = |x + 3| - 1$

Vocabulary

Inverse Function

Solve for the other variable

Practice Problems:

9. Find the inverse function

a. $m = 3g + 10$

$-10 \quad -10$

$\frac{m-10}{3} = \frac{3g}{3}$

$g = \frac{m-10}{3}$

b. $g = \frac{3w}{10} \cdot 10$

$10g = 3w$

$\frac{10g}{3} = \frac{3w}{3}$

$w = \frac{10g}{3}$

c. $f = 2(3x - 2)$

$f = 6x - 4$

$+4 \quad +4$

$\frac{f+4}{6} = \frac{6x}{6}$

$x = \frac{f+4}{6}$