Name Ivy
8A: Algebra 1

Date _____ #73
Period _____

Homework

1) (a) On a set of coordinate axes, graph the function $y = |x| + 1$ from $-5 \le x \le 5$.

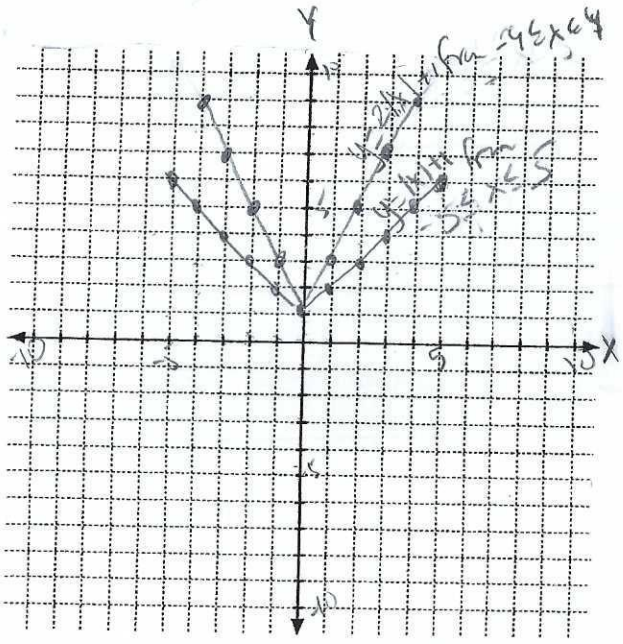
(b) On the same set of coordinate axes, graph the function $y = 2|x| + 1$ from $-4 \le x \le 4$.

(c) Describe how the changes in the coefficient affect the graphs. narrower or vert. stretch

$y = |x| + 1$

(a) Table of values

X	Y
-5	6
-4	5
-3	4
-2	3
-1	2
0	1
1	2
2	3
3	4
4	5
5	6



$y = 2|x| + 1$

(b) Table of values

X	Y
-4	9
-3	7
-2	5
-1	3
0	1
1	3
2	5
3	7
4	9

* no arrows b/c constraints given *

2) What will be the equation of the resulting graph if the graph of $y = |x|$ is shifted 3 units up?

A) $y = |x| + 3$
B) $y = |x - 3|$
C) $y = |x + 3|$
D) $y = |x| - 3$

3) What will be the equation of the resulting graph if the graph of $y = |x|$ is shifted units to the right?

A) $y = |x| - 4$
B) $y = |x + 4|$
C) $y = |x| + 4$
D) $y = |x - 4|$

4) When compared to the graph of $y = |x|$, the graph of $y = |x + 5|$ is

A) shifted to the left 5 units
B) shifted down 5 units
C) shifted up 5 units
D) shifted to the right 5 units

5) Write an equation for the function $y = |x|$ after a shift 7 units to the right.

$y = |x - 7|$

*Turn Over

6) In a–e, write an equation for the resulting function if the graph of $y = |x|$ is:

a. shifted 2.5 units down

b. shifted 6 units to the right

c. stretched vertically by a factor of 3 and shifted 5 units up

d. compressed vertically by a factor of $\frac{1}{3}$ and reflected in the x-axis

e. reflected in the x-axis, shifted 1 unit up, and shifted 1 unit to the left

narrower / wider

upside down

upside down

(a) $y = |x| - 2.5$

(b) $y = |x - 6|$

(c) $y = 3|x| + 5$

(d) $y = -\frac{1}{3}|x|$

(e) $y = -|x + 1| + 1$

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7) In a–d, describe the translation, reflection, and/or scaling that must be applied to $y = |x|$ to obtain the graph of each given function.

slide flip wider or narrow dilate

a. $y = -|x| - 4$

1) Reflection over the x-axis
2) translated 4 units down

b. $y = -2|x| + 2$

1) Reflection over the x-axis
4) narrower by scale factor of 2
3) translated 2 units up

c. $y = |x + 2| - 3$

1) translated 2 units left & 3 units down

d. $y = -|x - 1.5| + 4$

1) reflection over x-axis
2) translated 1.5 units right and 4 up.