

Name: _____ Period: _____

Score: _____ / _____ =

_____ % = _____

HW 3-6: Linear vs. Non-Linear

Show whether each set of tables represents a linear relationship by finding several slopes. For each linear relationship write an equation in slope-intercept form. If it is non-linear, explain why it is not.

1.

X	Y
-1	-5
0	-2
4	10
10	28

SLOPES

$$\frac{3}{1} = \frac{12}{4} = \frac{18}{6}$$

LINEAR!

EQUATION $y = 3x - 2$

2.

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

3.

X	Y
4	2
9	3
16	4
25	5

NON-LINEAR

NO constant rate of change

$$\frac{1}{5} \neq \frac{1}{7} \neq \frac{1}{9}$$

4.

X	Y
-2	-10
-1	-5
0	0
3	15

5.

X	Y
1	1
2	8
3	27
4	64

6.

X	Y
-4	12
-3	10
-2	8
-1	6

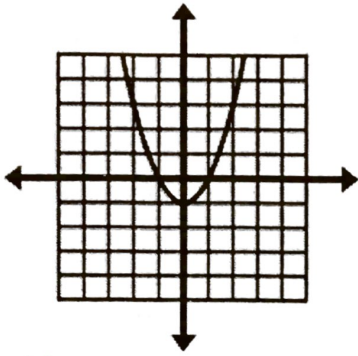
NON-LINEAR

NO constant rate of change

$$\frac{7}{1} \neq \frac{19}{1} \neq \frac{37}{1}$$

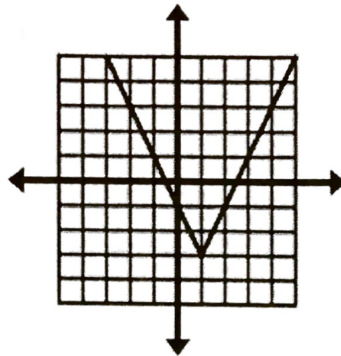
Problems 7-12: Determine whether the following graphs and equations are linear or not linear. Explain how you know.

7.

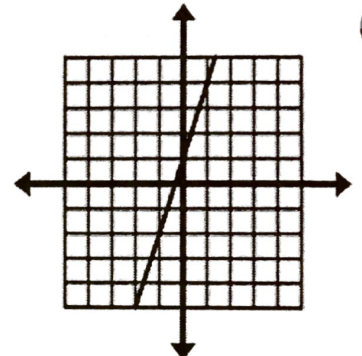


NONLINEAR
because it's curved

8.



9.



LINEAR
because it's a
straight
line

10. $y = |3x - 5| + 1$

11. $-2(x - 4) + 1 = y$

12. $y = (x^2 + 4) - x$

LINEAR

Because it can
be rearranged
to look like
 $y = mx + b$

Tell whether each equation is linear or non-linear. Explain why or why not.

13. $y = 2x + 5$

LINEAR $y = mx + b$

18. $y = |2x + 1|$

14. $y = x^3 + 1$

19. $y = \frac{x^2}{2}$

NONLINEAR

x is squared

15. $y = \frac{x}{3} - 2$ LINEAR

$y = mx + b$

20. $y = 4$

16. $y = 0.4x - 4$

21. $y = |x| + 10$

NO N LINEAR

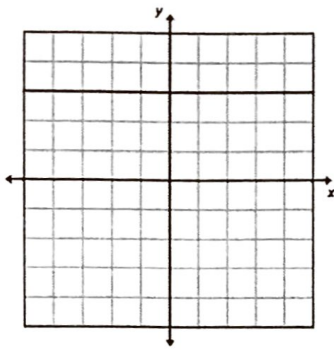
x is inside
absolute values

17. $y = x$ LINEAR

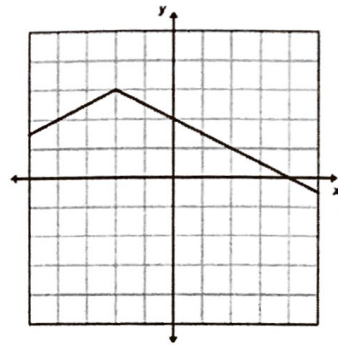
$y = mx + b$

Tell whether each graph is linear or non-linear. Explain. If it is linear, find the slope.

22.

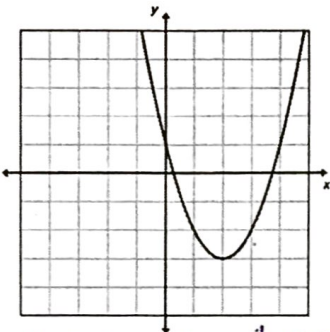


25.



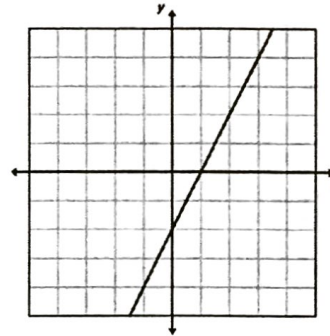
NON LINEAR
because it
is a bent line

23.

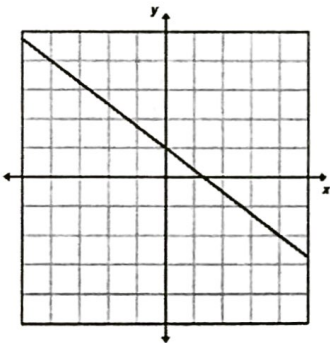


NON LINEAR because
it is curved

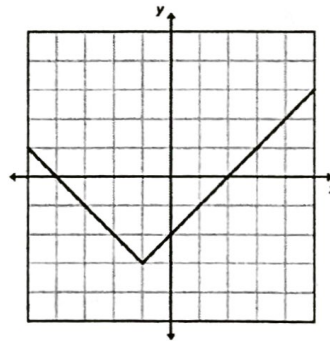
26.



24.



27.



NON LINEAR
because it is
a bent
line