

$Ax + By = C$ A, B, C are integers, $A \geq 0$

I. CHANGE EACH TO BEST STANDARD FORM and state the x-intercept and y-intercept.

1. $y = 2x - 5$

$-2x + y = -5$

$2x - y = 5$

x-int $2x = 5$
 $x = 5/2$

y-int -5

6. $\frac{1}{2}x + \frac{2}{3}y = -\frac{5}{6}$

$3x + 4y = -5$

x-int $3x = -5$
 $x = -5/3$

y-int $4y = -5$
 $y = -5/4$

II. FUNCTION NOTATION - Remember that $f(x)$ [say "f of x"] means the same as y .

$f(x) = 2x + 5$

$f(x) = x^2 - x + 1$

$f(x) = \frac{x-2}{5}$

3. Find $f(a)$.

$f(a) = 2a + 5$

4. Find $f(\frac{1}{2})$

$f(\frac{1}{2}) = (\frac{1}{2})^2 - \frac{1}{2} + 1$

$= \frac{1}{4} - \frac{1}{2} + 1$

$= -\frac{1}{4} + 1 = \frac{3}{4}$

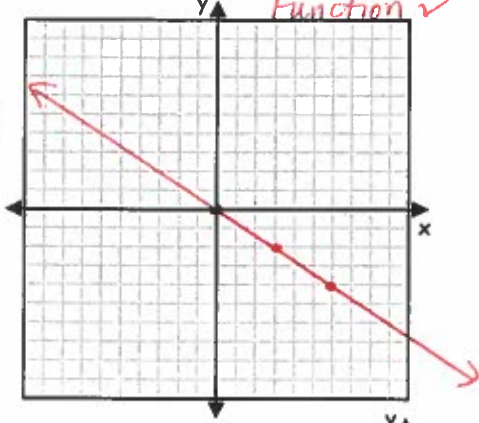
5. Find $f(-3)$.

$f(-3) = \frac{-3-2}{5}$

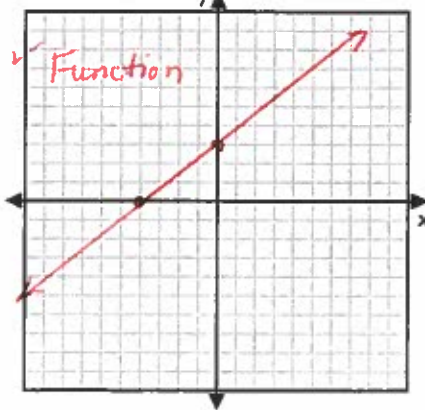
$= \frac{-5}{5} = -1$

III. GRAPH and state which of the following are functions. → use vertical line test

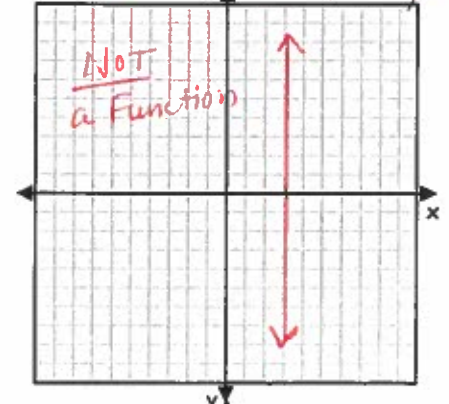
6. $y = -\frac{2}{3}x + 0$ $y = mx + b$ ← y-int.



7. $3x - 4y = -12$
x-int @ -4 y-int @ 3

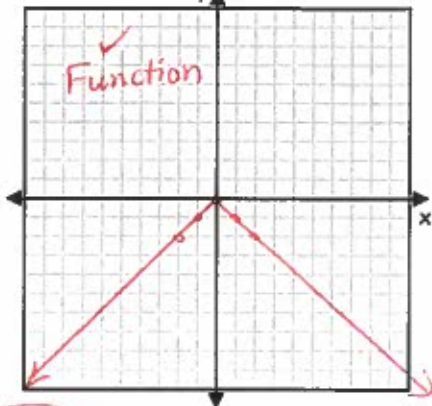


8. $x = 3$
VUX y can be anything

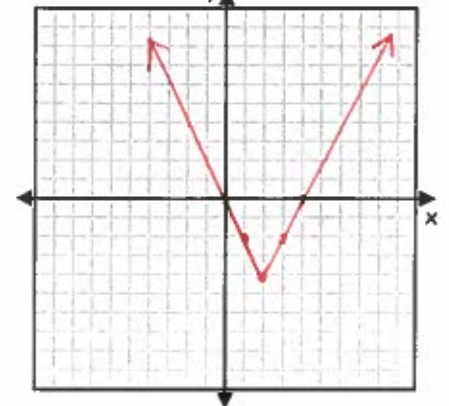


9: $y = -|x|$

x	y
0	0
1	-1
-1	-1
2	-2
-2	-2



10. $y = 2|x-2| - 4$
vertex (2, -4)
slope of ± 2



11. TRUE / FALSE: The domain of all of the above functions is all real numbers or $(-\infty, \infty)$. (If the statement is false, explain.) True EXCEPT #8 where the only domain is $x = 3$ $[3, 3]$ for most

12. TRUE / FALSE: The domain is $\{3\}$ for #8. or $\{3\}$

IV. WRITE EQUATIONS OF LINES. EXPRESS ALL ANSWERS IN SLOPE-INTERCEPT FORM.

13. (a) Write an equation for the line that passes through (2,3) and (6,-1). (b) What is the y-intercept? $b=5$

$$m = \frac{-1-3}{6-2} = \frac{-4}{4} = -1$$

$$y = mx + b$$

using (2,3)

$$3 = (-1)(2) + b$$

$$3 = -2 + b$$

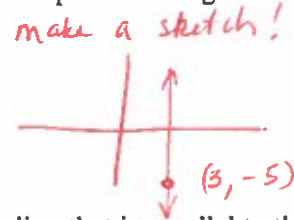
$$b = 5$$

$$y = -x + 5$$

14. (a) What is the slope of any vertical line? (b) Write an equation of the line that passes through (3,-5) with slope = undefined.

(a) VUX
 m is undefined

(b) $x = 3$



15. (a) What is the slope of any horizontal line? (b) What is the equation of the line that is parallel to the x-axis through the point (2, 2)?

(a) HoY
 $m = 0$



16. (a) What is the slope of the line $2x + 6y = -11$? (b) What is the x-intercept? (c) What is the y-intercept?

$$\frac{6y}{6} = \frac{-2x - 11}{6} - \frac{11}{6}$$

$$y = -\frac{1}{3}x - \frac{11}{6}$$

$$m = -\frac{1}{3}$$

(b) $2x + 6(0) = -11$

$$2x = -11$$

$$x = -\frac{11}{2}$$

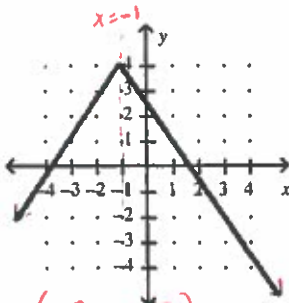
(c) $2(0) + 6y = -11$

$$6y = -11$$

$$y = -\frac{11}{6}$$

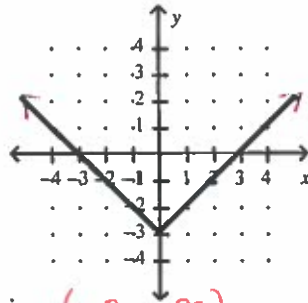
VI. FIND DOMAIN, RANGE, AND INCREASING & DECREASING (Use interval notation.)

17.



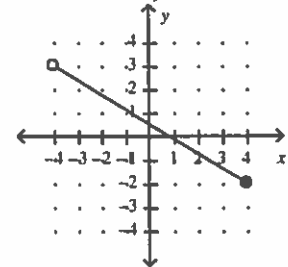
Domain: $(-\infty, \infty)$
 Range: $(-\infty, 4]$
 Increasing: $(-\infty, -1)$
 Decreasing: $(-1, \infty)$
 Is this relation a function? yes

18.



Domain: $(-\infty, \infty)$
 Range: $[-3, \infty)$
 Increasing: $(0, \infty)$
 Decreasing: $(-\infty, 0)$
 Is this relation a function? yes

19.



Domain: $(-4, 4]$
 Range: $[-2, 3)$
 Increasing: Not
 Decreasing: $(-4, 4]$ *
 Is this relation a function? yes

* decreasing over the whole domain

VII. RELATIONS AND FUNCTIONS.

20. Give an example of a relation that is not a function. 21. Give an example of a relation that is a function.

