

Advanced Algebra
Chapter 2 Review

Name: Answers
Period: _____

1. Is the relation a function? Why? Find the domain and range of each relation.

<p>a)</p> <p>Function? Yes or <u>No</u></p> <p>Domain: <u>-3, -2.5, -1, 0, 1, 2, 4</u></p> <p>Range: <u>-2, -0.5, 0, 2</u></p>	<p>b)</p> <p>$\{(5, 0), (8, 3), (1, 3), (-5, 2), (3, 8)\}$</p> <p>Function? <u>Yes</u> or No</p> <p>Domain: <u>-5, 1, 3, 5, 8</u></p> <p>Range: <u>0, 2, 3, 8</u></p>	<p>c)</p> <table border="1"> <thead> <tr> <th>Input</th> <th>Output</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>-2</td> </tr> <tr> <td>5</td> <td>-1</td> </tr> <tr> <td>1</td> <td>3</td> </tr> <tr> <td></td> <td>4</td> </tr> </tbody> </table> <p>Function? Yes or <u>No</u></p> <p>Domain: <u>-3, 5, 1</u></p> <p>Range: <u>-2, -1, 3, 4</u></p>	Input	Output	3	-2	5	-1	1	3		4
Input	Output											
3	-2											
5	-1											
1	3											
	4											

2. If $f(x) = 2 - 5x$ and $g(x) = x^3 + 2x$, find the following:

a) $f(-3)$	b) $g(2)$	c) $f(-8) - g(3)$
$2 - 5(-3)$	$2^3 + 2(2)$	$2 - 5(-8)$
$2 + 15$	$8 + 4$	$2 + 40$
<u>17</u>	<u>12</u>	$42 + 33 =$
		<u>75</u>

3. Write an equation for a line through the points $(-1, 3)$ and $(3, -9)$. Write in point-slope form, slope-intercept form, and standard form.

Slope: $\frac{-9-3}{3-(-1)} = \frac{-12}{4} =$ -3

Point Slope Form: $y - 3 = -3(x + 1)$ or $y + 9 = -3(x - 3)$

Slope Intercept Form: $y = -3x + 0$

Standard Form: $3x + y = 0$

4. Write an equation of a line through $(8, 3)$ and perpendicular to $y = \frac{1}{2}x + 3$. Write in point-slope form, slope-intercept form, and standard form.

Slope of new line: $m = -2$

Point Slope Form: $y - 3 = -2(x - 8)$

Slope Intercept Form: $y = -2x + 19$

Standard Form: $2x + y = 19$

$$y - 3 = -2(x - 8)$$

$$y - 3 = -2x + 16$$

$$\begin{array}{r} +3 \\ \hline y = -2x + 19 \end{array}$$

5. Write an equation of a line through $(-3, -9)$ that is parallel to $y = 4x - 5$. Write in point-slope form, slope-intercept form, and standard form.

Slope of new line: $m = 4$

Point Slope Form: $y + 9 = 4(x + 3)$

Slope Intercept Form: $y = 4x + 3$

Standard Form: $-4x + y = 3$

$$y + 9 = 4(x + 3)$$

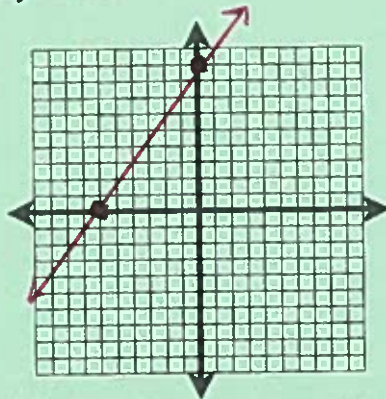
$$y + 9 = 4x + 12$$

$$\begin{array}{r} -9 \\ -9 \end{array}$$

$$y = 4x + 3$$

Graph and describe the solution set on the lines underneath.

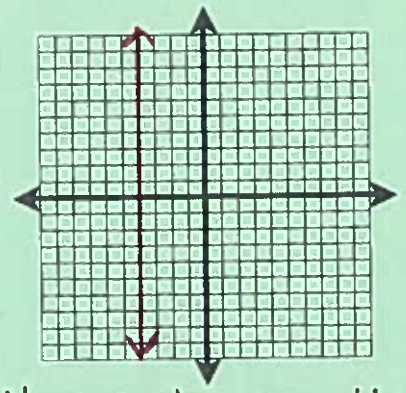
6. $3x - 2y = -18$



all points on the line

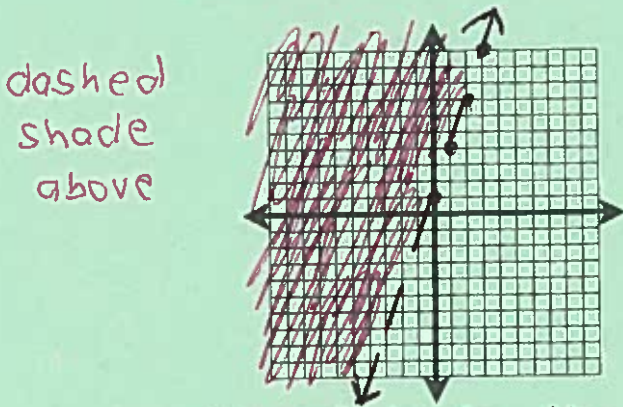
x int: -6
y int: 9

7. $x = -4$



all points on the line

8. $y > 3x + 1$

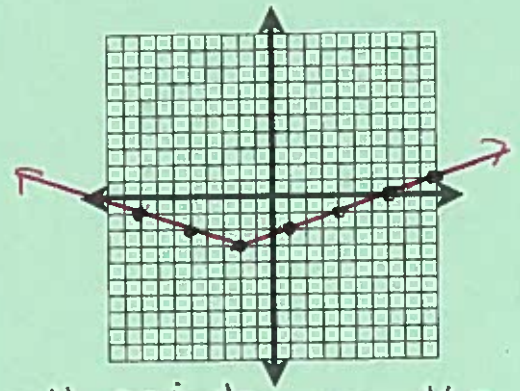


all points in the shaded region only

9. $y = \frac{1}{3}|x + 2| - 3$

open
up
left 2
down 3

slope: $\frac{1}{3}$

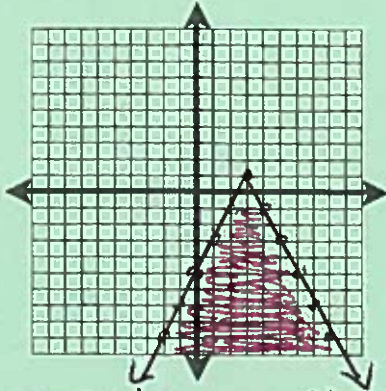


all points on the V

10. $y \leq -2|x - 3| + 1$

slope: 2

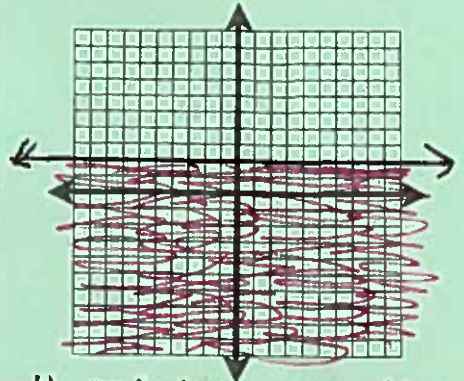
solid
shade
below



all points on the
V and in the shaded
region

11. $y \leq 2$

solid
shade
below



all points on the
line and in the shaded
region

12. Alexandra has a college savings account. After 3 years she has \$2569 in the account. After 10 years she has \$7630. a) Write a linear equation to model the amount of money in the account as a function of time. b) How much money will Alexandra have after 18 years?

Two Points (3, 2569) (10, 7630)

Slope $\frac{7630 - 2569}{10 - 3} = \frac{5061}{7} = \boxed{723}$

Linear Model $y - 2569 = 723(x - 3)$ or $y - 7630 = 723(x - 10)$

Answer \$ 13,414

$$\begin{aligned} y - 2569 &= 723(18 - 3) \\ y - 2569 &= 723(15) \\ y - 2569 &= 10,845 \\ + 2569 &+ 2569 \\ \hline y &= 13,414 \end{aligned}$$

13. At the beginning of week 7 Mrs. Stutheit has 250 pencils. At week 10, she has 220 pencils. a) Write a linear equation to model the number of pencils Mrs. Stutheit has as a function of time. b) How many pencils will Mrs. Stutheit have after 18 weeks?

Two Points (7, 250) (10, 220)

Slope $\frac{220 - 250}{10 - 7} = \frac{-30}{3} = \boxed{-10}$

Linear Model $y - 220 = -10(x - 10)$ or $y - 250 = -10(x - 7)$

Answer 140 pencils

$$\begin{aligned} y - 220 &= -10(18 - 10) \\ y - 220 &= -10(8) \\ y - 220 &= -80 \\ + 220 &+ 220 \\ \hline y &= 140 \end{aligned}$$

14. Complete the chart.

Equation	Does it open up or down?	Vertical Stretch or Vertical Shrink	What is the horizontal (x) shift?	What is the vertical (y) shift?	Where is the vertex? (,)
$y = 3 x+2 +5$	up	stretch	left 2	up 5	$(-2, 5)$
$y = -\frac{1}{4} x +7$	down	shrink	none	up 7	$(0, 7)$

15. A delivery crew is going to load a truck with tables and chairs. Each chair weighs 75lbs and each table weighs 80 lbs. The maximum weight load for the truck is 1200 lbs.

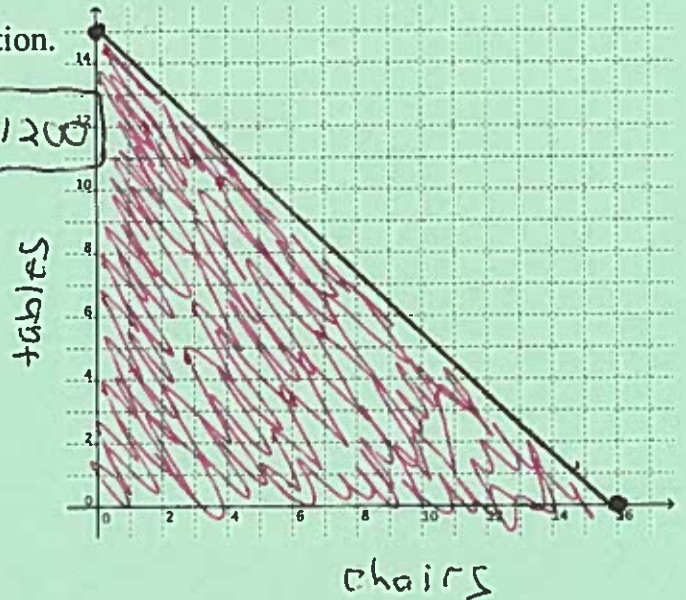
a) Write an inequality to represent the situation.

$$75c + 80t \leq 1200$$

b) Graph the inequality.

$$c \text{ int} : 16$$

$$t \text{ int} : 15$$



c) The delivery crew loads 12 tables into the truck. Find the number of chairs that can be loaded on the truck.

$$75c + 80(12) \leq 1200$$

$$\begin{array}{r} 75c + 960 \leq 1200 \\ -960 \quad -960 \\ \hline \end{array}$$

$$\begin{array}{r} 75c \leq 240 \\ \hline 75 \quad 75 \end{array}$$

$$c \leq 3.2$$

3
chairs