

Cornell Notes

Name Stephanie Hernandez Mrs. Asherny Date Sept. 1, 2011

Topic Direct Variation Class/Subject Algebra II P. 3

Standard:

Assignment:

(10:20 am)

(10:55 am)

To determine whether a relation is a direct variation from a table of values.

#8 - Direct variation worksheet

Used notes and previous homeworks to complete the handout on graphs & functions, Range and Domain.

Reviewing homework problems.

#10

(1,5) (4,6)

$$a) m = \frac{\Delta y}{\Delta x} = \frac{6-5}{4-1} = \frac{1}{3}$$

$$b) y - y_1 = m(x - x_1)$$

$$y - 5 = \frac{1}{3}(x - 1)$$

$$-5 = \frac{-15}{3}$$

$$y - 5 = \frac{1}{3}x - \frac{1}{3}$$

$$+ \frac{15}{3} \quad + \frac{15}{3}$$

$$y = \frac{1}{3}x + \frac{14}{3}$$

#13

$$x - 4y = 0$$

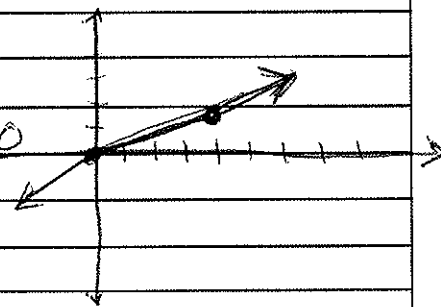
$$x = 0, -4y = 0 \quad y = 0$$

$$x - 4y = 0$$

$$-x \quad -x$$

$$-4y = x + 0$$

$$-4 \quad -4 \quad y = \frac{1}{4}x + 0$$



Direct Variation
What is it and how do I know
when I see it?

Definition: y varies directly as x means that $y = kx$ where k is the constant variation.

(see any similarities to $y = mx + b$?)

Another way of writing this is $k = \frac{y}{x}$. In other words the constant of variation (k) in a direct variation is the constant (unchanged) (ratio) of two variable quantities.

Cornell Notes

Name: Stephanie Hernandez	Mrs. Ashberry	Date: 9/1/11
Topic: Direct Variation	Class/Subject: Algebra II P. 3	

Examples of Direct Variation

What is the constant variation of the table?

What is the constant of variation of the table?

(10:55 am)

Question:

x	y	
4	6	$6/4 = k = 3/2$
8	12	$12/8 = k = 3/2$
12	18	$18/12 = k = 3/2$
18	27	$27/18 = k = 3/2$

$y = 3/2x$

(11:10 am)

✱ Homework ✱ →

x	y	Note: X increases
6	12	6, 7, 8
7	14	And y increases
8	16	12, 14, 16
		$k = y/x$
12/6 = 2	$k = 2$	The equation is: $y = 2x$
14/7 = 2	$k = 2$	
16/8 = 2	$k = 2$	Note: k stays constant
x	y	Note: x decreases
10	30	10, 5, 3
5	15	And y decreases
3	9	30, 15, 9
		$k = y/x$
30/10 = k = 3	$k = 3$	→ is the equation $y = 3x$
15/5 = k = 3	$k = 3$	
9/3 = k = 3	$k = 3$	
x	y	Note: x decreases
-4	-1	-4, -16, -40
-16	-4	And y decreases
-40	-10	-1, -4, -10
		$k = y/x$
-1/-4 = k = 1/4	$k = 1/4$	→ is the equation $y = 1/4x$
-4/-16 = k = 1/4	$k = 1/4$	
-10/-40 = k = 1/4	$k = 1/4$	
x	y	y varies directly with x
7	28	$28/7 = k = 4$ $y = 4x$
?	52	$52 = 4x$ $x = 13$
Worksheet ←		

Students learned how to determine if a relation is a direct variation by looking at a table of values. They learned how to determine constant of variation (k). They also practiced finding the constant of variation when they were given a table and how to find the equation of variation ($y = kx$).

Classwork

Domain and Range

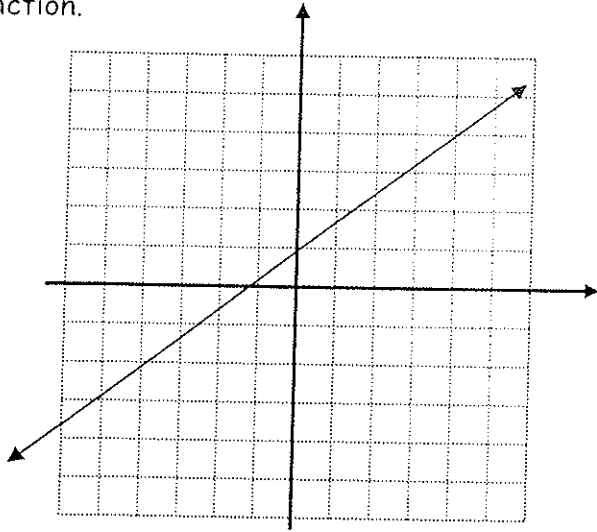
Due:

Name: _____

Period: _____

For each problem: a) State the Domain; b) State the Range; c) Determine if the graph is a function.

1.

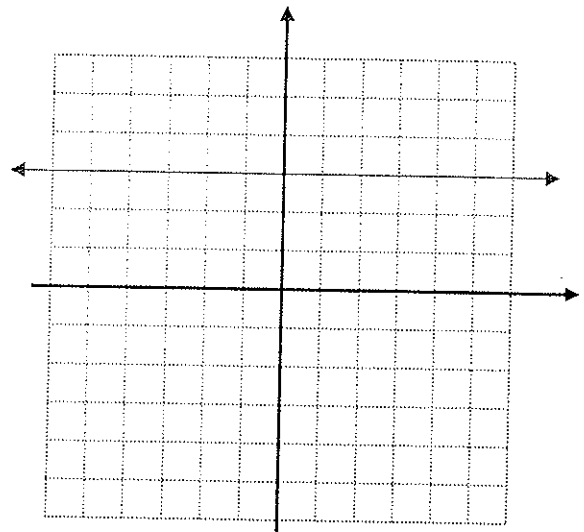


a) _____

b) _____

c) _____

2.

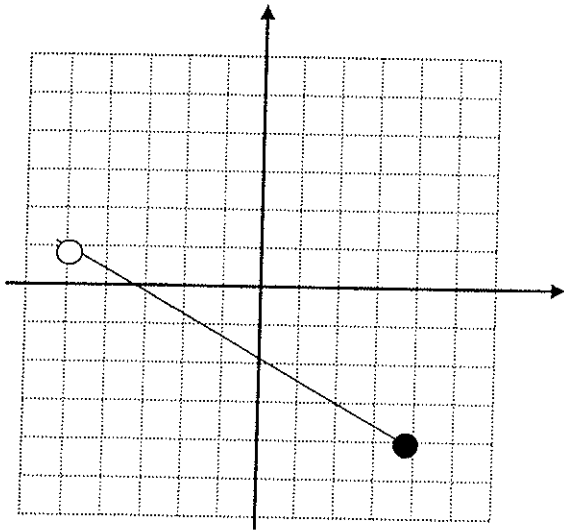


a) _____

b) _____

c) _____

3.

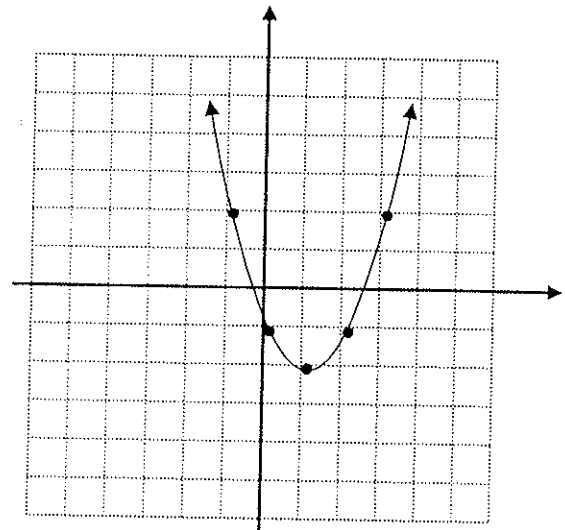


a) _____

b) _____

c) _____

4.



a) _____

b) _____

c) _____

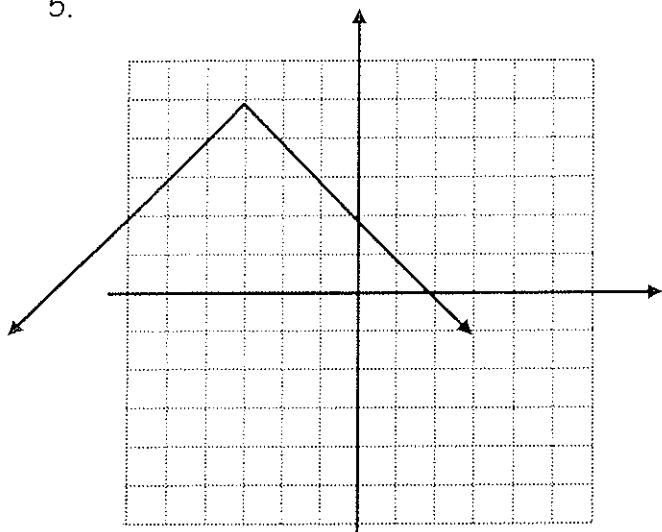
Domain and Range Homework

Due:

Name: _____

Period: _____

5.

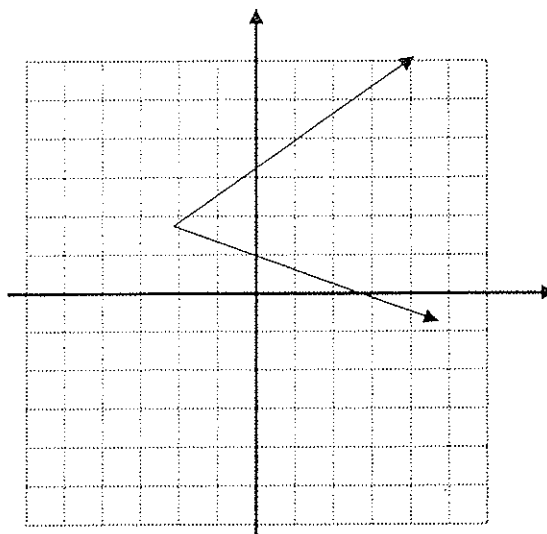


a) _____

b) _____

c) _____

6.

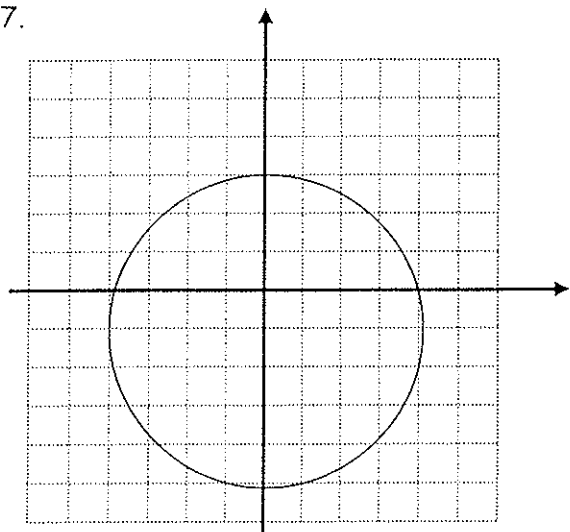


a) _____

b) _____

c) _____

7.



a) _____

b) _____

c) _____

8.

Susie's car travels about 25 miles on one gallon of gas. She has between 10 and 12 gallons of gas in the tank.

a) List the independent and dependent quantities.

b) Find the reasonable domain and range values.

Homework

Name: _____ Date: _____

Adv Algebra with Trig

TOPIC 1: Beyond Linear Functions

Direct Variation Classwork

1. Tell if the following tables represent a direct variation relationship.

A.

X	Y
1	10
4	9
7	8

B.

X	Y
90	3
80	2
70	1

C.

X	Y
9	3
11	5
13	7

D.

X	Y
75	15
85	10
90	5

2. Tell if the data has a direct variation relationship. If yes, give the constant variation and the equation to represent the data.

X	Y
9	3
12	4
15	5

k = _____ Equation: _____

3. Write the equation of a direct variation that has a constant of variation equal to -3.
4. Y and X vary directly. If the constant of variation is $\frac{1}{2}$, then what is the value of y when $x = -6$?
3. Y and X vary directly. If the constant of variation is 4, then what is the value of x when $y = 6$?
5. Suppose y varies directly as x. If $y = 3$ when $x = 15$, then find x when $y = 5$.
6. Suppose y varies directly as x. Find x when $y = 10$ if $y = -7$ when $x = -14$.
7. Suppose y varies directly as x. If $x = 15$ when $y = 12$, find x when $y = 21$.
8. Suppose y varies directly as x. If $x = 24$ when $y = 8$, then what is the constant of variation?
9. The area of a circle, A, **varies directly** as the square of its radius r.
Sketch graph,
(a) to show the relationship between the area and its radius
(b) to show the relationship between the area and the square of its radius.

