Name Key Date

Chapter 3 Review

Determine whether the relation is a function. Explain.

1. $(2, 3), (4, 5), (-4, 7), (2, 8), (9, 10)$

NO; 2 repeats

2. $(-5, 2), (-3, 8), (0, 1), (3, 7), (5, 11)$

Yes; each input has 1 output

4.

x	0	1	2	3
y	−2	0	2	4

yes, each input has 1 output

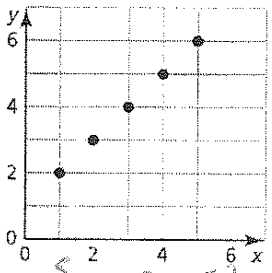
5.

Input	−2	0	2	−2
Output	10	7	4	1

NO; 2 repeats

Find the domain and range of each relation, and determine whether or not the graph represents a function. Is the function discrete or continuous?

6.



Domain: $\{1, 2, 3, 4, 5\}$

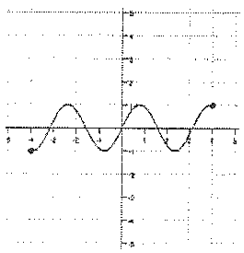
Range: $\{2, 3, 4, 5, 6\}$

Function: (Yes) or No

Explain: Passes VLT

(Discrete) or Continuous

7.



Domain: $\{x \mid -4 \leq x \leq 4\}$

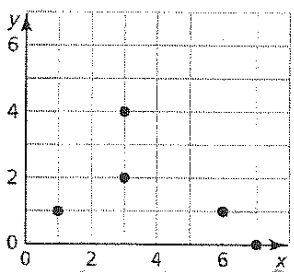
Range: $\{y \mid -1 \leq y \leq 1\}$

Function: (Yes) or No

Explain: Passes VLT

Discrete or (Continuous)

8.



Domain: $\{1, 3, 6, 7\}$

Range: $\{0, 1, 2, 4\}$

Function: Yes or (No)

Explain: does not pass VLT

(Discrete) or Continuous

9. The function $a = 700 - 20w$ represents the amount of money, a, left in your bank account after every \$20, w, withdrawn from an ATM account.

a. Identify the independent and dependent variables.

w a

b. Is it discrete or continuous function? Explain.

discrete; withdrawals can only be whole numbers

c. Identify the domain and range of function for no more then 6 withdraws.

D = $\{0, 1, 2, 3, 4, 5, 6\}$

R = $\{580, 600, 620, 640, 660, 680, 700\}$

w	a
0	700
1	680
2	660
3	640
4	620
5	600
6	580

Determine whether the relation or table represents a *linear* or *nonlinear function.* Explain.

10. $\{(0,7), (1,11), (2,15)(3,19)\}$

linear

11.

Input	2	4	6	8
Output	1	2	8	16

non-linear

Determine whether the equation represents a *linear* or *nonlinear* function.

12. $y = x^4 - 2$

nonlinear

13. $2x + 3y = 5$

$3y = -2x + 5$

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

linear

14. $xy = 10$

$y = \frac{10}{x}$

nonlinear

Evaluate the function when $x = -3$, 0, and 4.

15. $f(x) = 2x + 7$

x	$2x+7$	$f(x)$
-3	$2(-3)+7$	1
0	$2(0)+7$	7
4	$2(4)+7$	15

$f(-3) = 1$

$f(0) = 7$

$f(4) = 15$

16. $h(x) = 3 - 2x - 12$

x	$3-2x-12$	$h(x)$
-3	$3-2(-3)-12$	-3
0	$3-2(0)-12$	-9
4	$3-2(4)-12$	-17

Find the value of *x* so that the function has the given value.

17. $f(x) = 4x; f(x) = -32$

$-32 = 4x$

$x = -8$

18. $r(x) = \frac{1}{2}x + 1; r(x) = 5$

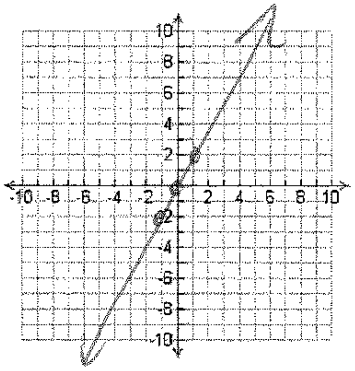
$5 = \frac{1}{2}x + 1$

$4 = \frac{1}{2}x$

$x = 8$

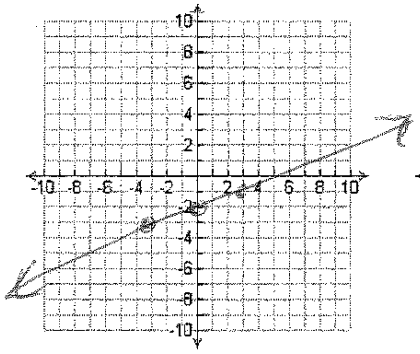
Graph the linear function using a table of values.

19. $f(x) = 2x$



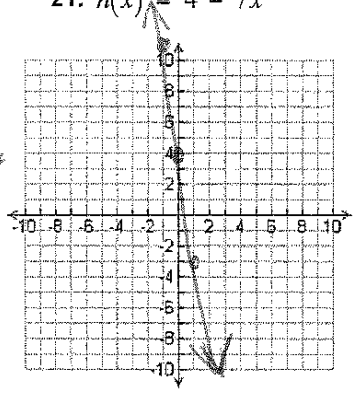
x	y
-1	-2
0	0
1	2

20. $w(x) = \frac{1}{3}x - 2$



x	y
-3	-3
0	-2
3	-1

21. $h(x) = 4 - 7x$



x	y
-1	11
0	4
1	-3

22. The function $f(x) = \frac{108}{x}, x \neq 0$ represents the average speed, *f(x)*, of a car that took a 108-mile trip in *x* hours.

a. Is this function continuous or discrete?

continuous

b. What was the average speed of the car if the trip took 3 hours?

$f(3) = \frac{108}{3} =$ 36 mph

c. How long did the trip take if the average speed was 54 miles per hour?

$54 = \frac{108}{x}$ $54x = 108$

$x =$ 2 hours

The following points lie on a line. Find the slope of the line.

23. $(1, 3), (2, 6), (3, 9), (4, 12), (5, 15)$

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

24. $(-2, -2), (0, 2), (2, 6), (4, 10), (6, 14)$

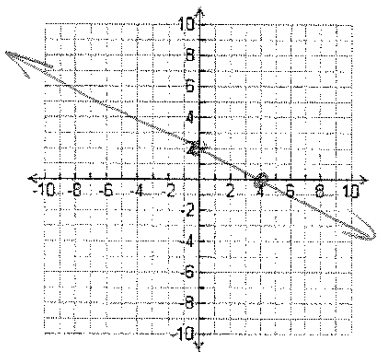
$m = \frac{4}{2} = 2$

Use intercepts to graph the linear equation. Label the points corresponding to the intercepts.

25. $2x + 4y = 8$

x-intercept= (4,0)

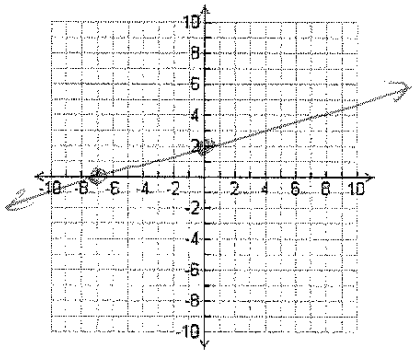
y-intercept= (0,2)



26. $2x - 7y = -14$

x-intercept= (-7,0)

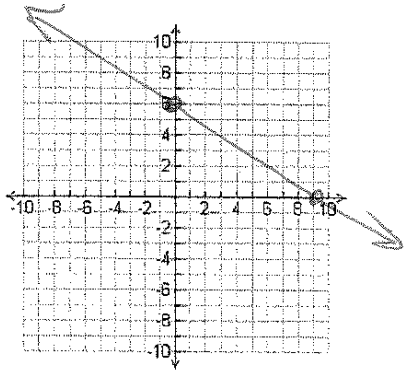
y-intercept= (0,2)



27. $x + \frac{3}{2}y = 9$

x-intercept= (9,0)

y-intercept= (0,6)



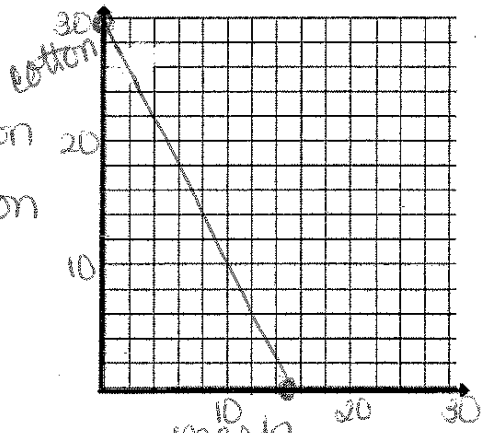
28. You are ordering warm-up clothes for the basketball team. The mesh shirts cost $16 each and the cotton shirts cost $8 each. You have a budget of $240 for the shirts. The equation $16x + 8y = 240$ models the total cost, where x is the number of mesh shirts and y is the number of cotton shirts.

a. Graph the equation. Interpret the intercepts.

$16x + 8y = 240$

(15,0) → 15 mesh/0 cotton

(0,30) → 0 mesh/30 cotton



b. Four players decide they want the cotton shirts. How many mesh shirts can you order?

13 mesh shirts

$16x+8(4)=240$

$16x=208$

$x=13$

Find the slope and *y*-intercept. Then graph the linear equation.

29. $y = \frac{1}{3}x - 2$

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

b= (0,-2)

30. $y = -3x$

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

b= (0,0)

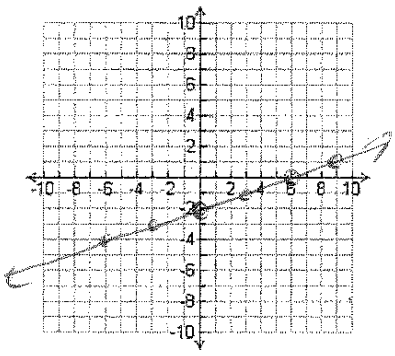
31. $4x - 2y = 8$

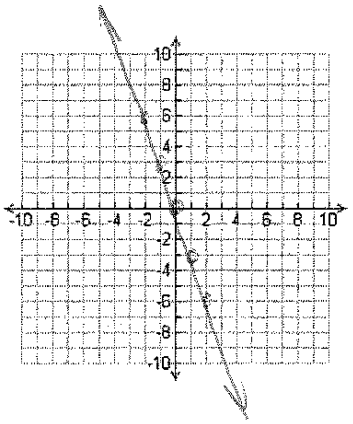
$-2y = -4x+8$

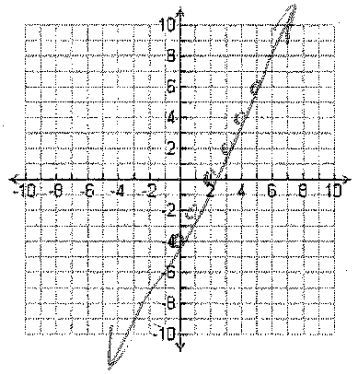
$y=2x-4$

m= $\frac{2}{1}$

b= (0,-4)







32. Function A represents the amount of money spent after purchasing a certain amount of the same candy bar(s). Function B represents the distance after running at a consistent rate over a period of time. Compare the domains.

Function A: discrete

Function B: continuous