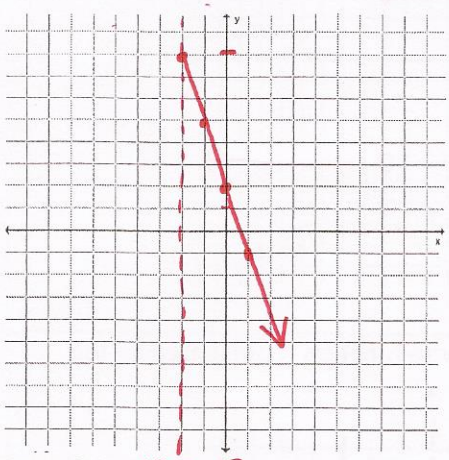
Algebra Unit 3 Pt. 2
Unit 3 Special Functions Study Guide

Name Key
Date _____ Per _____

Discrete and Continuous Functions

7. Graph the following function and tell whether it represents a discrete or continuous function.

$f(x) = -3x + 2$ for $x > -2$



$f(9) = -3(9)+2$
$= -25$

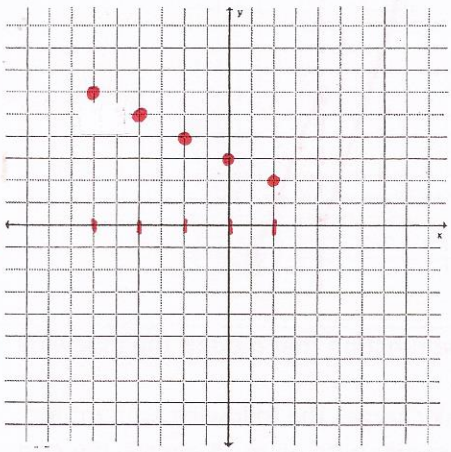
Domain: $x > -2$

Range: $y < 8$

f(1) = -1 f(-7) = N/A f(9) = -25

8. Graph the following function and tell whether it represents a discrete or continuous function.

$f(x) = -\frac{1}{2}x + 3$ for $x = -6, -4, -2, 0, 2$



Domain: $x = -6, -4, -2, 0, 2$

Range: $y = 6, 5, 4, 3, 2$

f(0) = 3 f(-4) = 5 f(4) = N/A

9. Does the following function/relationship represent a discrete or continuous function? Explain

You cannot have parts of people.

People	3	4	5	6
Cost for Movie	$24.75	$33.00	$41.25	$49.50

Give the equation of the relationship: $y = 8.25x$

10. Does the following function/relationship represent a discrete or continuous function? Explain

Miles and time can all be represented in part.

Number of Miles	0	1	2	3	4
Time (minutes)	-1.29	8.52	18.33	28.14	37.95

9.81 9.81

Give the equation of the relationship. $y = 9.81x - 1.29$

Piecewise Functions

11. Given:

$$f(x) = \begin{cases} -3x + 2, & x \leq 3 \\ 5x + 13, & x > 3 \end{cases}$$

Determine:
$f(-1)$ and $f(3)$

$y = -3(-1)+2$
$y = 3+2$
$y = 5$

$y = -3(3)+2$
$= -9+2$
$y = -7$

12. Given:

$$f(x) = \begin{cases} 12, & -2 < x \leq 8 \\ x^2 - 15, & 8 < x < 13 \end{cases}$$

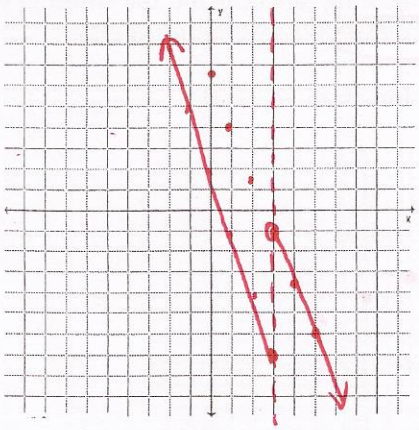
Determine:
$f(3)$ and $f(15)$

$f(3) = 12$

N/A

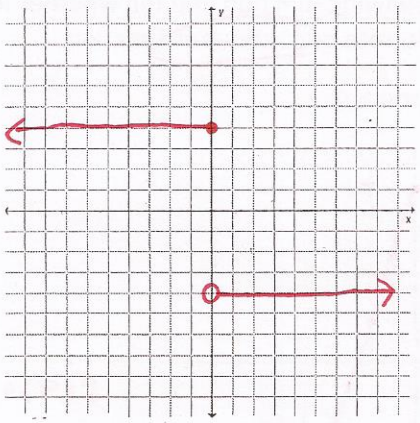
13. Graph the following piecewise function

$$f(x) = \begin{cases} -3x + 2, & x \leq 3 \\ -5x + 13, & x > 3 \end{cases}$$



14. Graph the following piecewise function

$$f(x) = \begin{cases} 4, & x \leq 0 \\ -4, & x > 0 \end{cases}$$

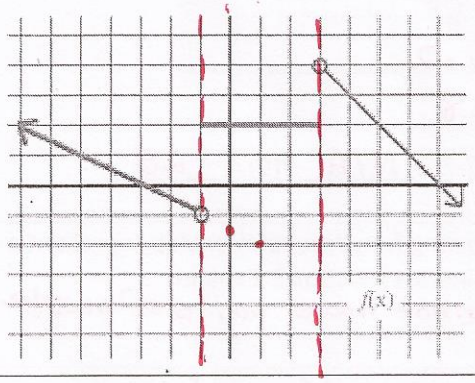


15. Write a piecewise function that models the following situation.

The roller skating rink charges the following amount for private parties; for parties with up to 75 guests, the cost is a set-up fee of $450 plus $5 per guest, and for parties with over 75 guests they charge a flat rate of $850.

$$f(x) = \begin{cases} 450 + 5x & x \leq 75 \\ 850 & x > 75 \end{cases}$$

16. Write the piecewise function represented by the given graph.



$$g(x) = \begin{cases} -\frac{1}{2}x - \frac{3}{2} & \text{if } x < -1 \\ 2 & \text{if } -1 \leq x \leq 3 \\ -x + 7 & \text{if } x > 3 \end{cases}$$