

Math 1 Chapter 3 Study Guide

Determine whether the relation is a FUNCTION or NONFUNCTION. Explain.

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

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

NonFunction - 2 has two outputs

Function - all inputs have 1 output

3) $(4, 3), (7, 3), (9, 3), (-2, 3), (3, 3)$

4) $(1, 4), (7, -11), (0, -22), (1, 8), (-1, 67)$

Function - all inputs have 1 output

NonFunction - 1 has 2 outputs

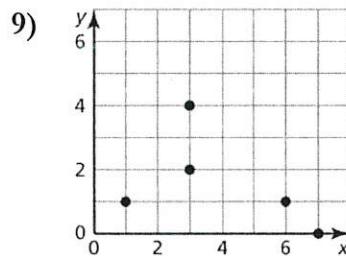
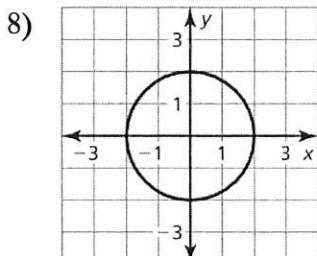
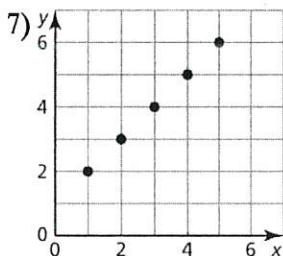
5)	<table border="1"> <tr> <td>x</td><td>0</td><td>1</td><td>2</td><td>3</td></tr> <tr> <td>y</td><td>-2</td><td>0</td><td>2</td><td>4</td></tr> </table>	x	0	1	2	3	y	-2	0	2	4
x	0	1	2	3							
y	-2	0	2	4							

6)	<table border="1"> <tr> <td>Input</td><td>-2</td><td>0</td><td>2</td><td>-2</td></tr> <tr> <td>Output</td><td>10</td><td>7</td><td>4</td><td>1</td></tr> </table>	Input	-2	0	2	-2	Output	10	7	4	1
Input	-2	0	2	-2							
Output	10	7	4	1							

Function - all inputs have 1 output

NonFunction - -2 has two outputs

Determine whether the graph represents a FUNCTION or NONFUNCTION, and identify if it is discrete or continuous.

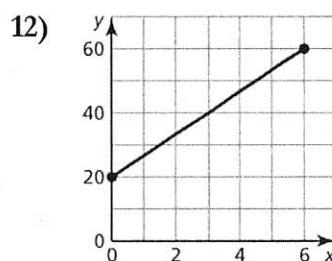
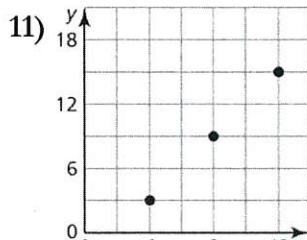
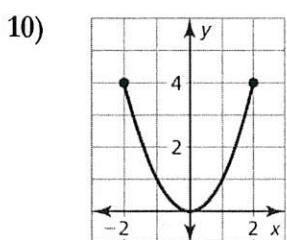


Function, Discrete

NonFunction, Continuous

nonFunction, Discrete

Find the domain and range of the following.



Domain: $-2 \leq x \leq 2$

Domain: $x = 4, 8, 12$

Domain: $0 \leq x \leq 6$

Range: $0 \leq y \leq 4$

Range: $y = 3, 7, 15$

Range: $20 \leq y \leq 60$

- 13) The function $y = -3x + 44$ represents the amount of money left in your school lunch account y (in dollars) after x days.

- a. Identify the independent and dependent variables.

independent - x days
dependent - y dollars

- b. If the domain is 1, 2, 3, and 4, find the range of the function.

Range: $y = 41, 38, 35, 32$

Determine whether the table represents a LINEAR or NONLINEAR function. Explain.

14)

x	0	1	2	3
y	7	11	15	19

+4 +4 +4

15)

Input	2	4	6	8
Output	1	2	8	16

+1 +6 +8

Linear. Consistent change in x and y NonLinear, Inconsistent change in output.

Determine whether the equation represents a LINEAR or NONLINEAR function. Explain.

16) $y = x^4 - 2$

NonLinear - x^4

Linear - x and y

NonLinear - x^2

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

19) $f(x) = x - 5$

$f(-3) = (-3) - 5 = -8$

$f(0) = (0) - 5 = -5$

$f(4) = (4) - 5 = -1$

20) $g(x) = -5x + 7$

$g(-3) = -5(-3) + 7 = 22$

$g(0) = -5(0) + 7 = 7$

$g(4) = -5(4) + 7 = -13$

21) $h(x) = 3 - 2x - 12$

$h(-3) = 3 - 2(-3) = 9$

$h(0) = 3 - 2(0) = 3$

$h(4) = 3 - 2(4) = -5$

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

22) $f(x) = 4x; f(x) = -32$ 23) $r(x) = \frac{1}{3}x + 2; r(x) = 4$ 24) $q(x) = 2x + 1; q(x) = 17$

$$\begin{array}{r} 4x = -32 \\ \hline 4 \end{array}$$

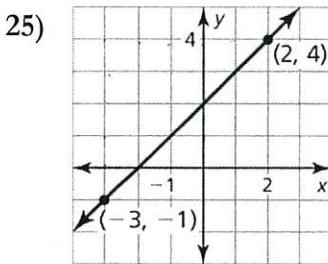
$x = -8$

$$\begin{array}{r} \frac{1}{3}x + 2 = 4 \\ -2 -2 \\ \hline \frac{1}{3}x = 2 \cdot \frac{3}{1} \\ x = 6 \end{array}$$

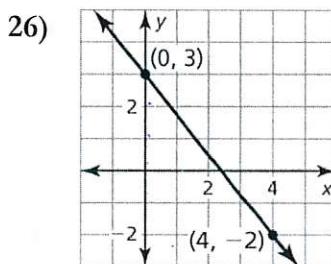
$$\begin{array}{r} 2x + 1 = 17 \\ -1 -1 \\ \hline 2x = 16 \\ \hline 2 \end{array}$$

$x = 8$

Find the slope of the line.



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



Slope = $-\frac{5}{4}$

27)

x	3	1	-1	-3
y	-4	1	6	11

+5 +5 +5

Slope = $-\frac{5}{2}$

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.

$(0, 30)$ You can buy a maximum of 30 cotton shirts
 $(15, 0)$ You can buy at most 15 mesh shirts

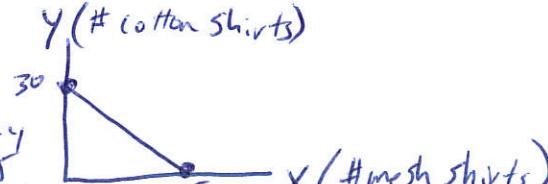
b. Four players decide they want the cotton shirts. How many mesh shirts can you order?

$16x + 8y = 240$

$16x + 8(4) = 240$

$$\begin{array}{r} 16x + 32 = 240 \\ -32 -32 \\ \hline 16x = 208 \end{array}$$

$$\begin{array}{r} 16x = 208 \\ \hline 16 \end{array}$$



$x = 13$

You can order 13 mesh shirts

29) Let $g(x)$ be the percent of your friends with a landline phone x years after 2000. Explain the meaning of each statement.

a. $g(0) = 100$

In 2000, 100% of friends have landlines

b. $g(5) = g(6)$

The % of friends with landlines in 2005 will be the same in 2006.

c. $g(10) = m$

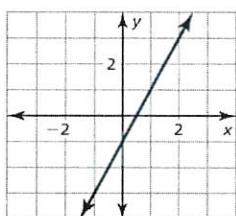
In 2010, $m\%$ of friends have landlines.

d. $g(11) > g(12)$

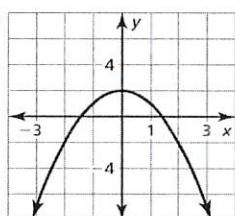
The % of friends with landlines in 2011 will be greater than in 2012.

Determine whether the graph represents a LINEAR or NONLINEAR function. Explain.

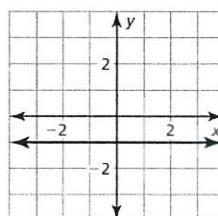
30)



31)



32)



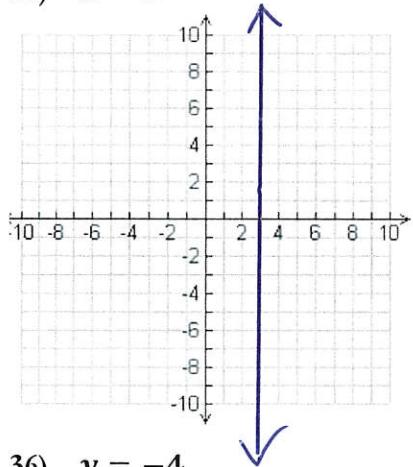
Linear - Straight line

nonLinear - curved line

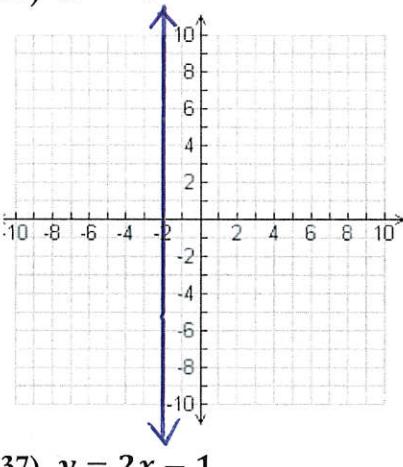
Linear - Straight line

Graph the following.

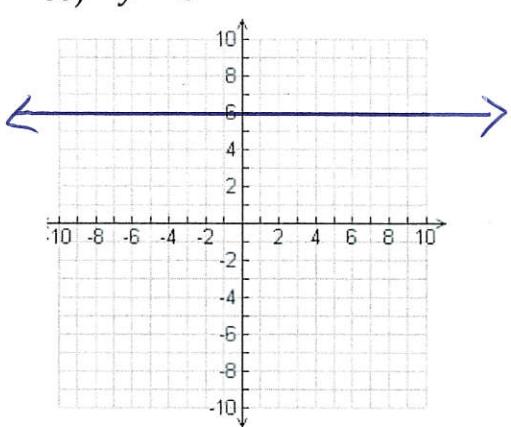
33) $x = 3$



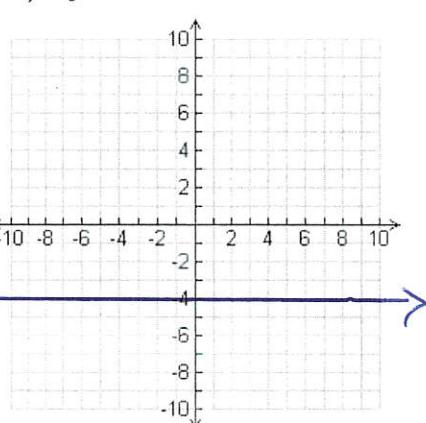
34) $x = -2$



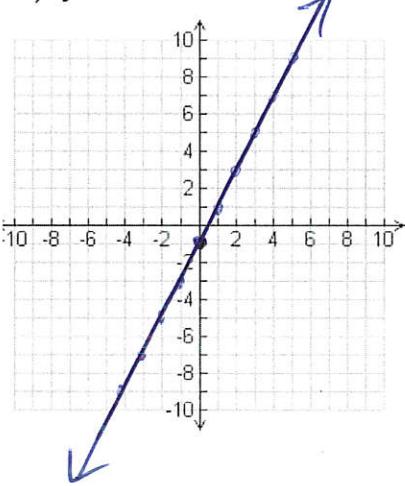
35) $y = 6$



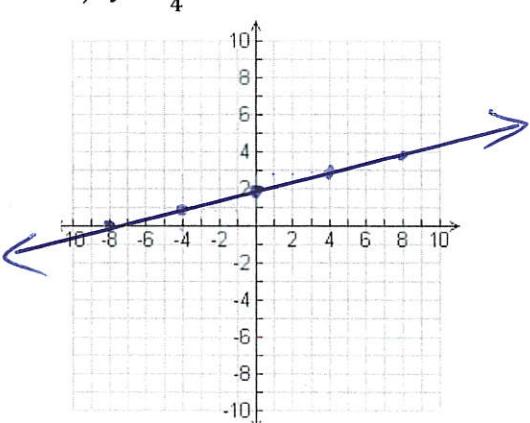
36) $y = -4$



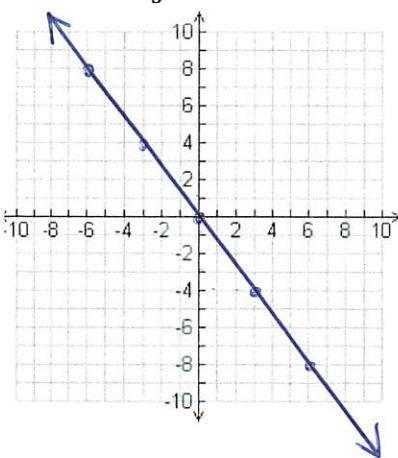
37) $y = 2x - 1$



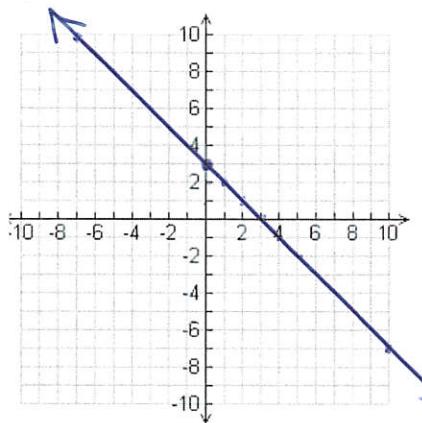
38) $y = \frac{1}{4}x + 2$



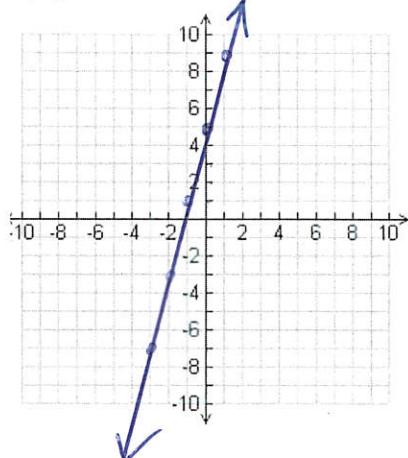
39) $y = -\frac{4}{3}x$



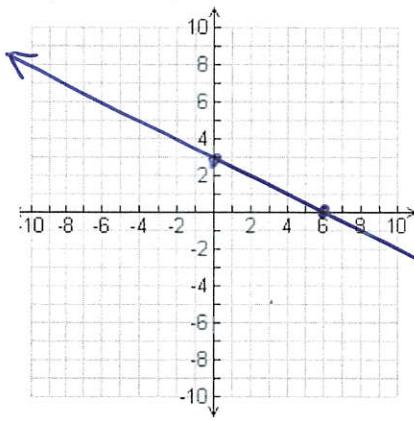
40) $y = -x + 3$



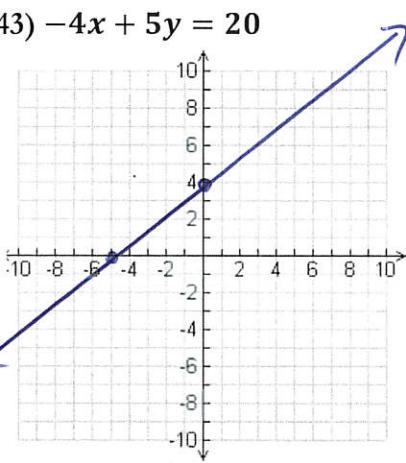
41) $y = 4x + 5$



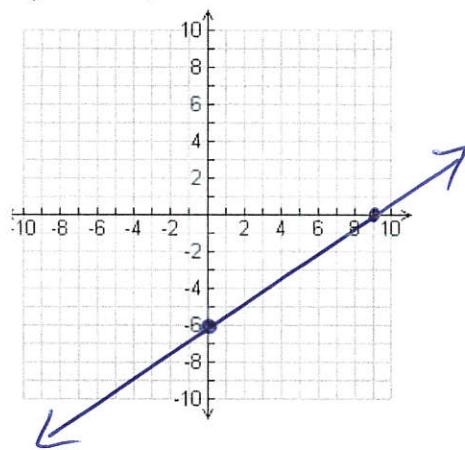
42) $2x + 4y = 12$



43) $-4x + 5y = 20$



44) $2x - 3y = 18$



Find the x-intercept and y-intercept of the following.

45) $-x + 2y = 8$

xint $(-8, 0)$

yint $(0, 4)$

Solve.

48) $x + 3 = 40$

$$\begin{array}{r} -3 \\ \hline x \end{array} = 37$$

46) $4x + 4y = 24$

xint $(6, 0)$

yint $(0, 6)$

47) $-6x + 5y = 60$

xint $(-10, 0)$

yint $(0, 12)$

50) $2(2r - 4) = -52$

$$\begin{array}{r} 4r - 8 \\ +8 \\ \hline 4r \\ \hline \end{array} = \begin{array}{r} -52 \\ +8 \\ \hline -44 \\ \hline \end{array}$$

$$r = -11$$

51) $b + 2 - 1 \geq 11$

$$\begin{array}{r} b+1 \geq 11 \\ -1 \quad -1 \\ \hline b \geq 10 \end{array}$$

\leftarrow ~~10~~

52) $8w + 7 < 3w - 3$

$$\begin{array}{r} -3w \quad -3w \\ \hline 5w + 7 < -3 \\ -7 \quad -7 \\ \hline 5w < -10 \\ \hline 5 \\ \hline w < -2 \end{array}$$

\leftarrow ~~10~~ \rightarrow

53) $|x + 1| < 4$

$$\begin{array}{r} -5 \quad -1 \quad 3 \\ \hline \end{array}$$

$-5 < x < 3$