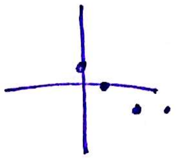
Algebra 2 Trig
Linear Functions Review Assignment 2016-17

Name key

Determine is the relation is a function. Explain why or why not. Then state the domain & range.

1. (3, -1), (0, 1), (1, 0), (5, -1)



Yes

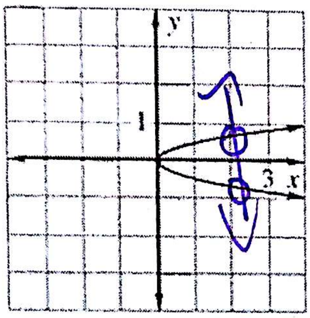
Domain: { 0, 1, 3, 5 }
Range: { -1, 0, 1 }

2. (2, -5), (-2, -5), (-1, 4), (-2, 0), (3, 4)

NO, not one to one

Domain: { -2, -1, 2, 3 }
Range: { -5, 0, 4 }

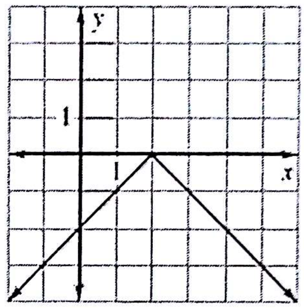
3.



NO

Domain: { $0, \infty$ }
Range: { $-\infty, \infty$ }

4.



Domain: { $-\infty, \infty$ }
Range: { $-\infty, 0$ }

Evaluate the function for the given value(s).

5. $f(x) = -2(x+3) - 4$

a) f(-3) = $-2(-3+3)-4 = -4$

b) f(1) = $-2(1+3)-4 = -12$

c) f(2) = $-2(2+3)-4 = -14$

6. $f(x) = (x+3)(x-1)$

a) f(-2) = $(-2+3)(-2-1) = -3$
$1(-3)$

b) f(0) = $(0+3)(0-1) = -3$

c) f(3) = $(3+3)(3-1) = 12$
$6(2)$

Determine if the function is a polynomial. Explain why or why not.

7. $f(x) = 3x^4 - 6x^3 + 4$

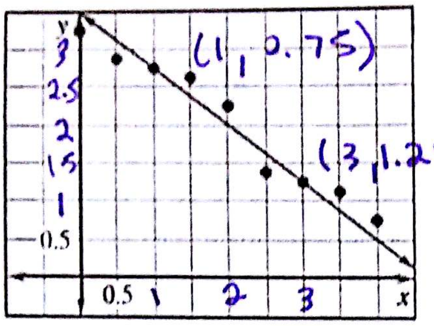
Yes

8. $f(x) = -2x^2 + \frac{3}{4}x - 1$

Yes

Determine if the correlation coefficient should be -1, -0.5, 0, 0.5, or 1. Then find the line of best fit.

9.



-1

$y = -.75x + 3.5$

Graph the following functions on a separate sheet of paper. Make sure to state the domain and range for #10 – 14.

see graphs

10. $f(x)=2x+1$

11. $y=\frac{-1}{2}(x+2)+1$

$y = -\frac{1}{2}x \cancel{-1+1}$ 0

12. $2x-4y=-8$

$\frac{-4y}{-4} = \frac{-2x-8}{-4}$

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

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

14. $f(x)=-3|x-2|-3$

15. $f(x)=\begin{cases} \frac{1}{2}x+2, & if\ x\le 4 \\ -2x+1, & if\ x>4 \end{cases}$

16. $f(x)=\begin{cases} -3, & if\ -2\le x<0 \\ 2, & if\ 0\le x<2 \\ 7, & if\ 2\le x<4 \end{cases}$

Write the equations of the following lines.

17. Write the equation of a line in slope – intercept form that passes through the point (8, -1) and is <u>parallel</u> to y = 3x + 3.

$y + 1 = 3(x-8)$

$y + 1 = 3x - 24$

$y = 3x - 25$

18. Write the equation of a line in standard form that passes through the point (8, -1) and is <u>perpendicular</u> to $y = \frac{-1}{2}x + 3$.

$y + 1 = 2(x-8)$

$y + 1 = 2x - 16$

$y = 2x - 17$

19. Write the equation of a line that has a slope of $\frac{-1}{2}$ and passes through the point (1, 3).

$y - 3 = -\frac{1}{2}(x-1)$

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

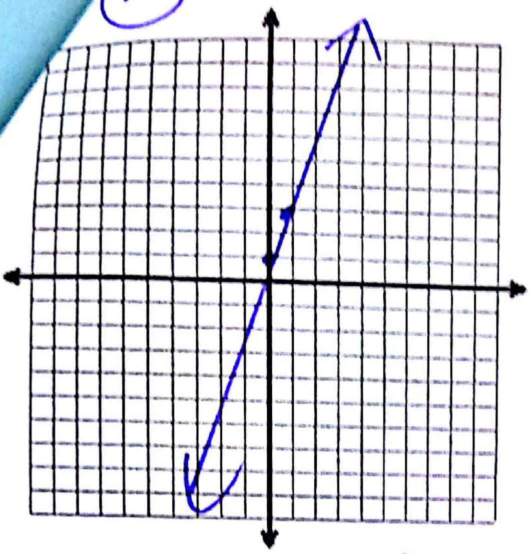
$y = \frac{-1}{2}x + 3.5$

20. Write the equation of the horizontal line that passes through the point (4, -3).

$y = -3$

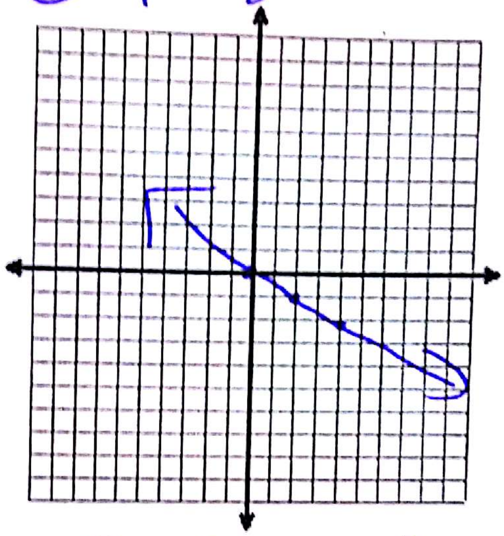
Assignment: ____________

(10) $f(x) = 2x+1$



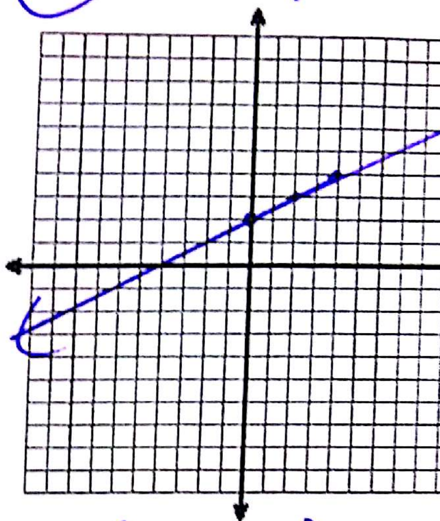
D: $(-\infty, \infty)$
R: $(-\infty, \infty)$

(11) $y = -\frac{1}{2}x$



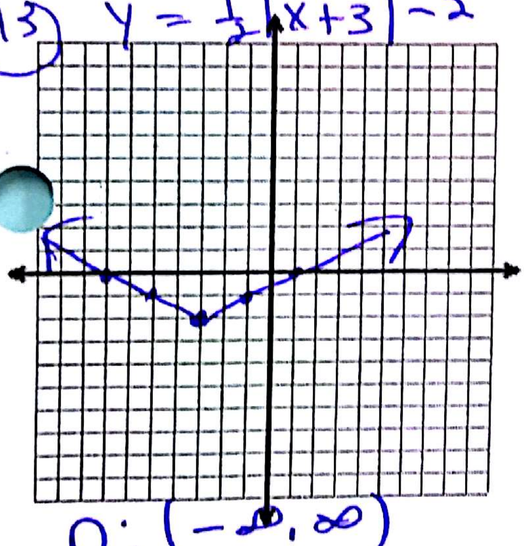
D: $(-\infty, \infty)$
R: $(-\infty, \infty)$

(12) $2x - 4y = -8$



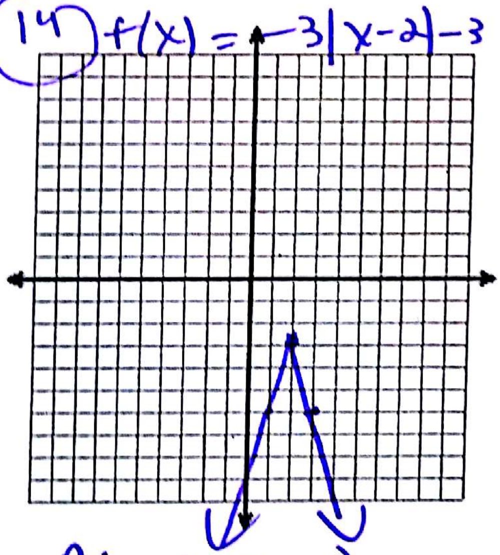
D: $(-\infty, \infty)$
R: $(-\infty, \infty)$

(13) $y = \frac{1}{2}|x+3| - 2$



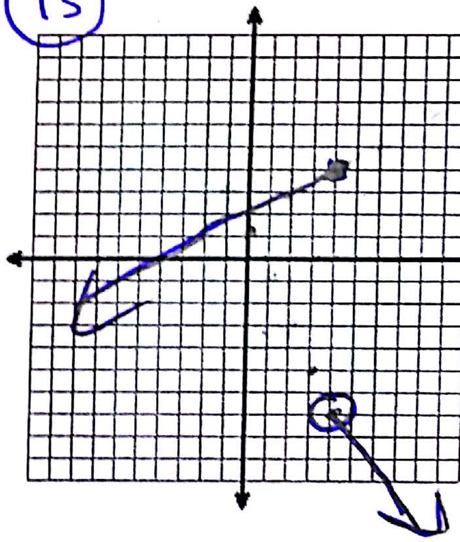
D: $(-\infty, \infty)$
R: $(-2, \infty)$

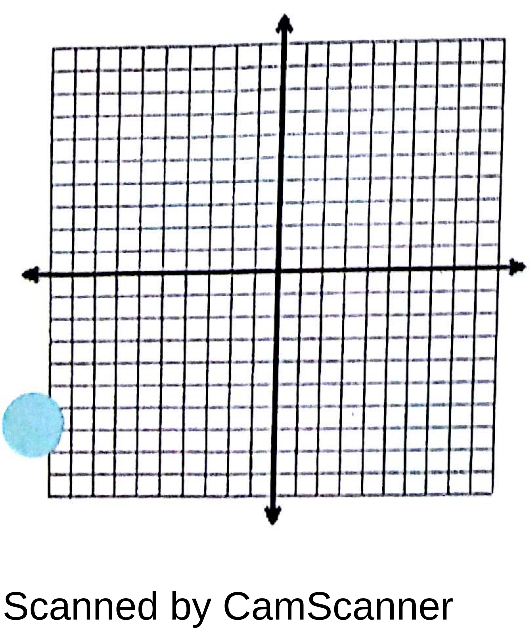
(14) $f(x) = -3|x-2| - 3$

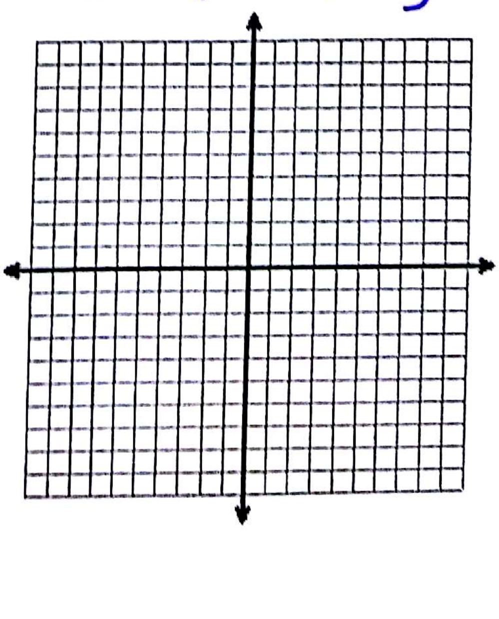


D: $(-\infty, \infty)$
R: $(-\infty, -3]$

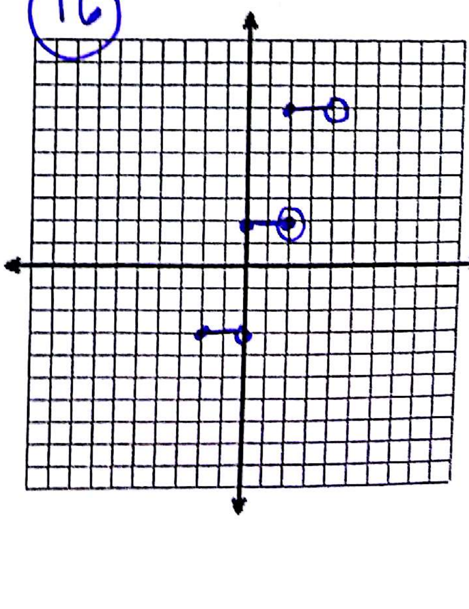
(15)



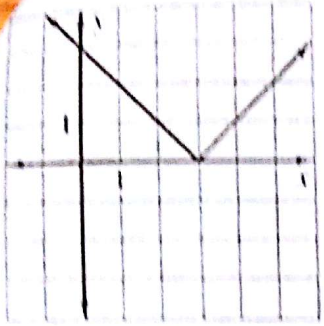




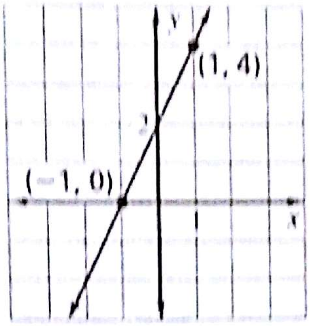
(16)



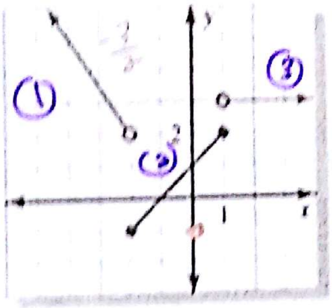
equation of the following graphs. Be sure to state the domain & range for #21 – 22.



22.



23.



$y = |x-3|$

Domain: $(-\infty, \infty)$

Range: $(0, \infty)$

$y = 2x+2$

Domain: $(-\infty, \infty)$

Range: $(-\infty, \infty)$

$$f(x) = \begin{cases} -\frac{3}{2}x-1 & x<-2 \\ x+1 & -2\le x\le 1 \\ 3 & x>1 \end{cases}$$

The following problems are modeling problems and should be completed using your calculator. (Hint: do not make your life more difficult by trying to do these problems by hand.)

24. The following table shows the population of a town from 1996 to 2010. Assume that t is the number of years since 1996 and P is measure in thousands of people.

Year	1996	1998	2000	2002	2004	2006	2008	2010
Years since 1996, t	0	2	4	6	8	10	12	14
Population, P	15.7	16.4	18.0	21.3	22.4	25.8	26.2	28.3

a) Use a graphing calculator to find the best – fitting linear model for the data.

$y = .9625x + 15.025$

b) Using the model, what is the population in 2009?

16.276

c) What would you predict would be the population in 2015?

33.3125

25. The drama club at your high school sells t – shirts as a fundraiser. The table shows data from that last four years for the price charged for a t – shirt, x, and the total revenue earned from selling them, y.

Price, x	8	10	12	14
Revenue, y	925	1050	1200	1550

a) Use a graphing calculator to find the best – fitting linear model for the data.

$y = 101.25x + 67.5$

b) Using the model, how many shirts do they sell when they charge $16 for a t – shirt?

1687.50

c) Do you think this model will give a good estimate for the number of t – shirts sold when they cost $22?

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