Review for Test #1 over Ch 3

Work all the problems on a separate piece of paper showing all steps.

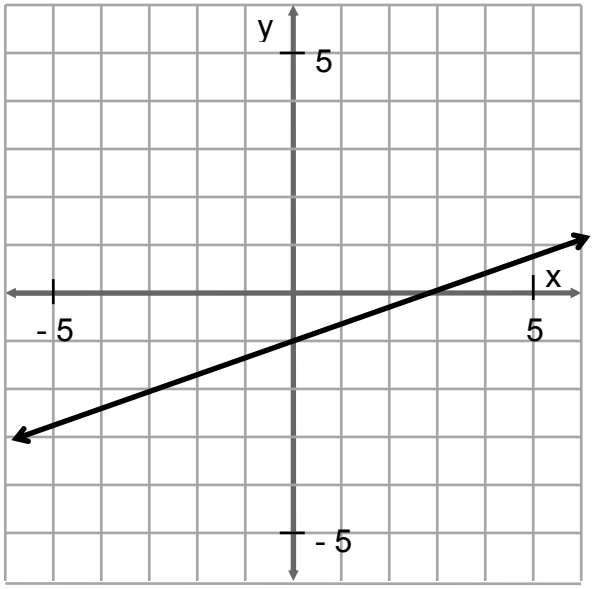
For the following graphs,

a) Find the x- intercepts and the y- intercepts if they exist,

b) If it is a linear equation, find the slope,

c) Write the equation of the line in slope-intercept form (if possible),
(If it is not a linear equation, write "N/A" for parts b and c.)

1)



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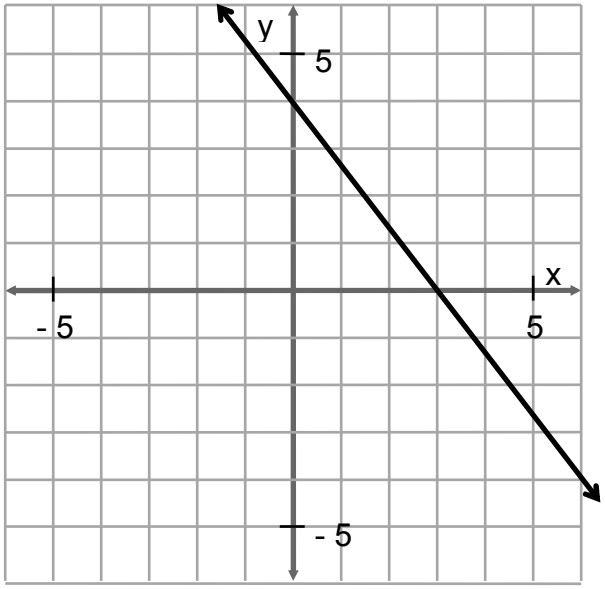

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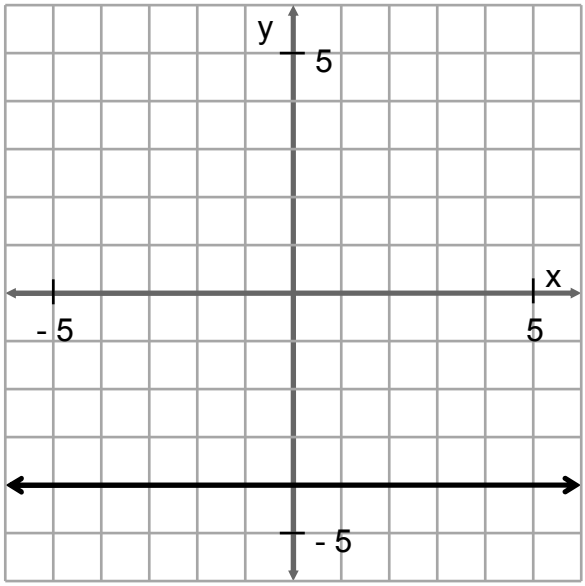

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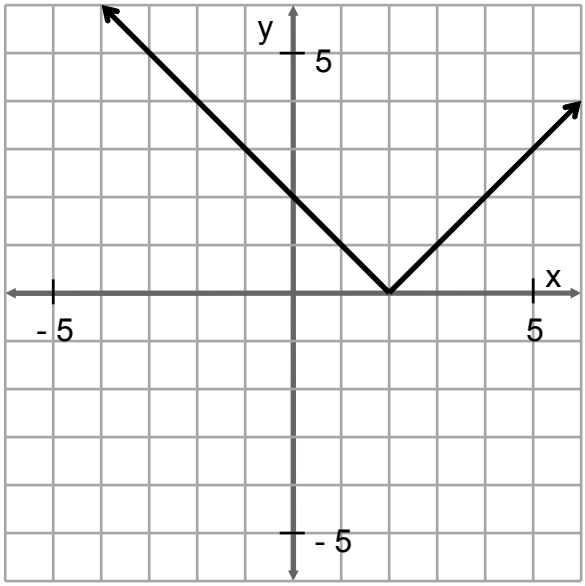

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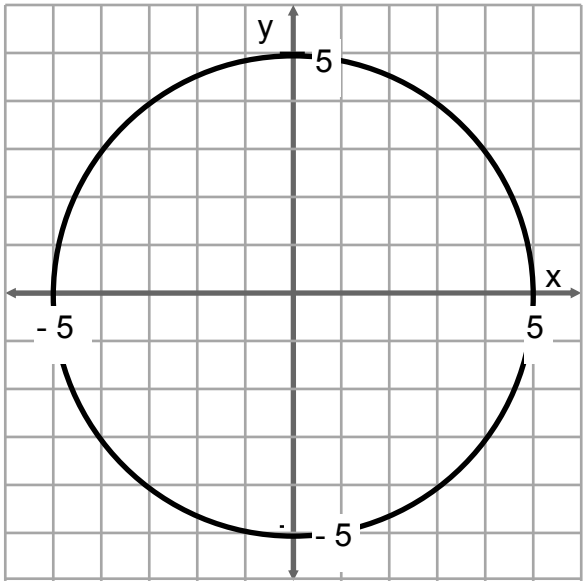

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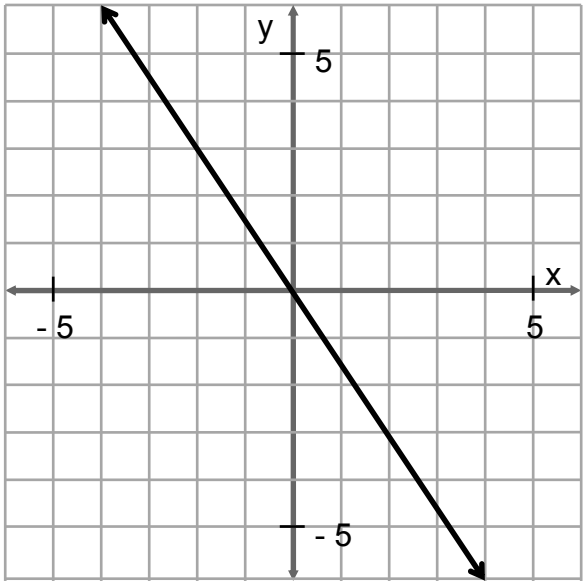

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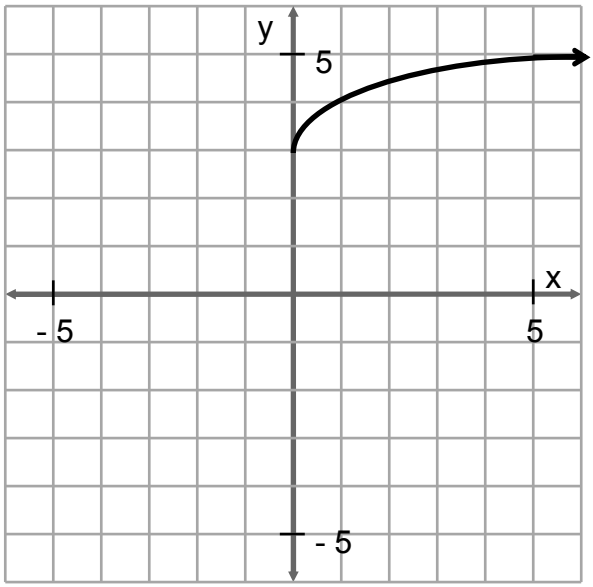

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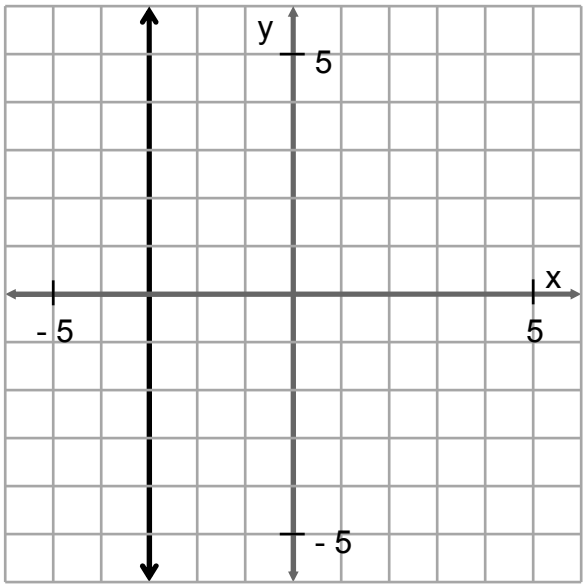

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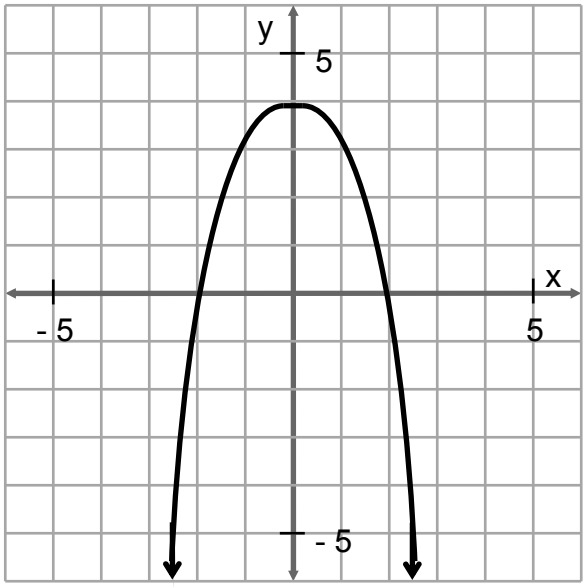

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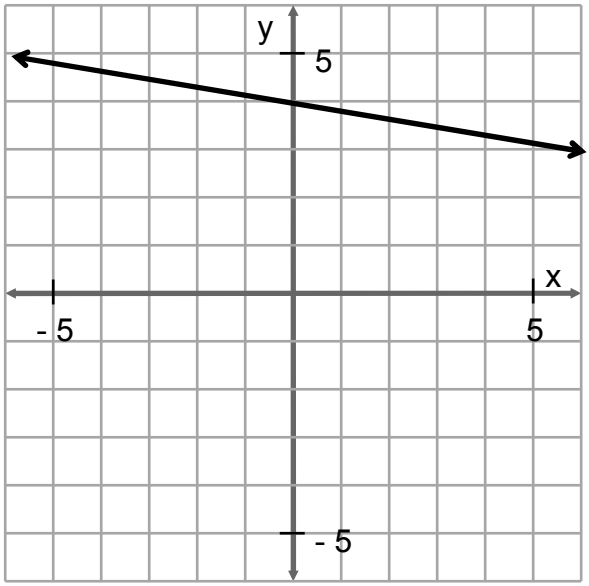


Find the equation of the line passing through the given points:

11) (– 3, 6) and (9, 6)

12) (1, 2) and (8, 3)

13) (4, – 7) and (4, 3)

14) (– 3, – 4) and (– 2, 7)

15) (– 2, 3) and (2, 5)

16) (– 0.3, 0.5) & (– 0.1, – 0.3)

Find the slope and the y- intercept of the following lines:

17) $3x + 4y = 8$

18) $x – 4y = 12$

19) $y = 7$

20) $x = – 3y + 6$

21) $6x – y = 2$

22) $4 = x$

Sketch the graph of the following (be sure to label the axes):

23) $3x + 2y = 6$

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

25) $x = 3y$

26) $y = – 4x$

27) $y = – 3$

28) $x = 2$

29) $3x – 2y = 5$

30) $x – 5y = 0$

31) $x = – 4$

32) $y = 2$

33) $3x – y = 1$

34) $y = \frac{4}{3} x + 1$

Find the equation of the line that satisfies the following conditions:

35) The line passes through (– 4, – 5) and is parallel to $4y – 3x = 7$.

36) The line passes through (1, – 3) and is perpendicular to $2x + 6y = 1$.

37) The line passes through (– 0.5, 2) and is parallel to $y = 6$.

38) The line passes through (3, – 2) and is perpendicular to $7x – 3y = 2$.

39) The line passes through (2, – 3) and is parallel to $3x + 4y = 12$.

40) The line passes through (– 5, 8) and is perpendicular to $y = 3$.

Solve the following:

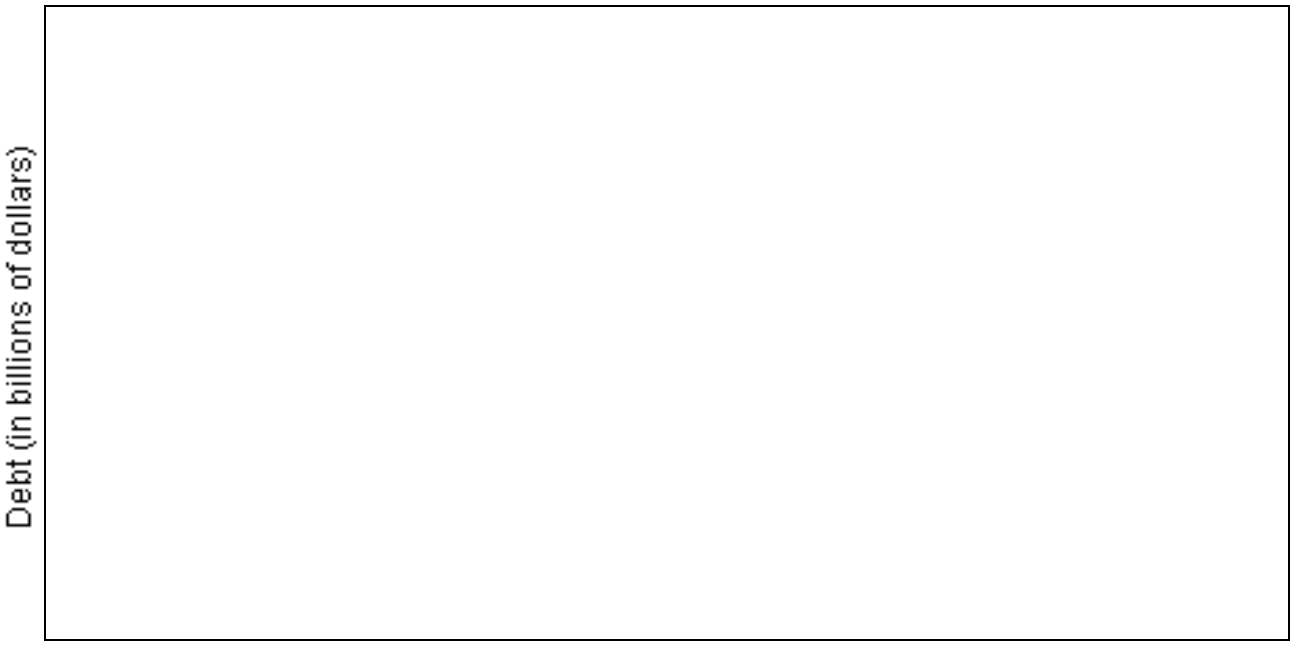
41) Juanita's Parking Garage charges $1.25 plus 55¢ for each half hour unit of time.

a) Write a linear equation to compute the total cost, y, of parking in this garage for x number of half hours.

b) Use the equation from part a to find the total cost to park in the garage for four hours.

42) The graph below shows total consumer debt, y, in billions of dollars beginning in 2002 (Source: www.federalreserve.gov).

Total Consumer Debt in the US



Year (x = 0 corresponds to 2001)

a) Which is the independent variable?

b) Which is the dependent variable?

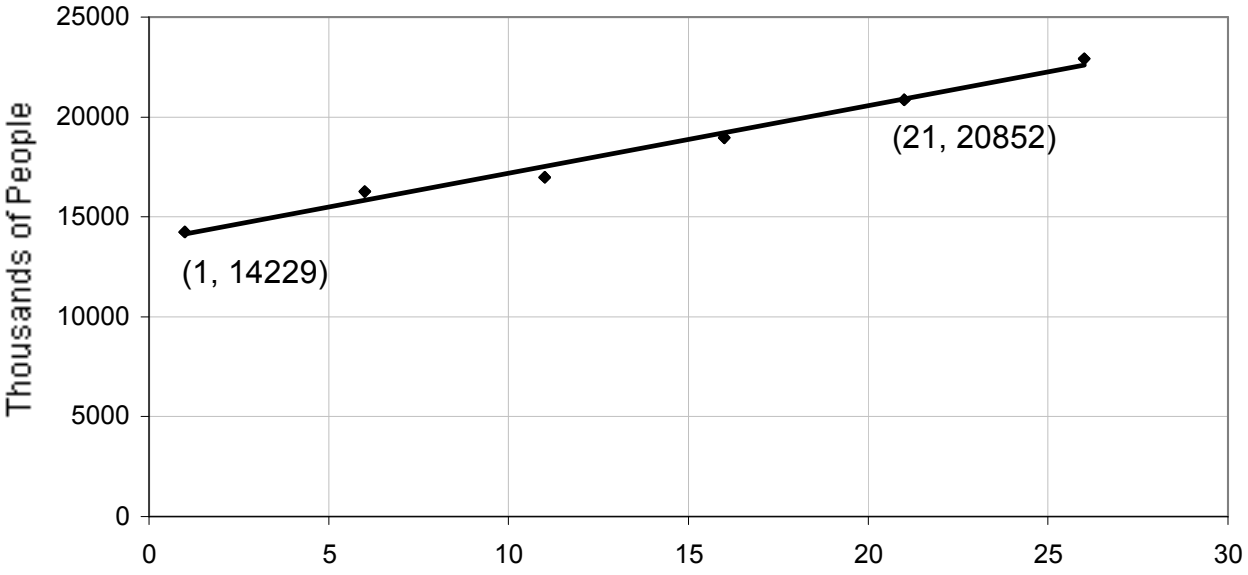
c) Use the equation to estimate the total consumer debt in 2004.

d) Interpret meaning of the slope in this context.

43) Prissy's Copy Center charges $2.45 for binding plus 4¢ per page to copy a manuscript.
   a) Write a linear equation to compute the total cost, y, of copying a manuscript x number pages long,
   b) Use the equation from part a to find the total cost to copy a 159 page manuscript.

44) The graph below shows the population of Texas, y, in thousands of people every five years beginning in 1980 (Source: www.census.gov).

Population of Texas

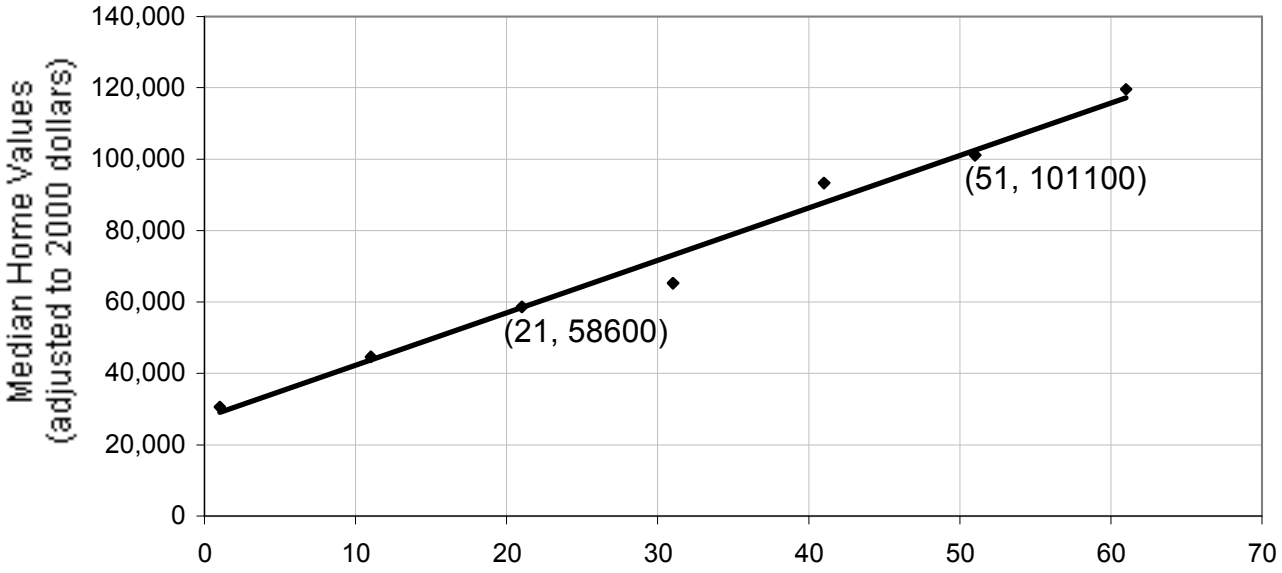


Year (x = 0 corresponds to 1979)

   a) Use the ordered pairs given to find the slope of the line.
   b) Interpret the meaning of the slope in this context.
   c) Find a linear equation for the line.
   d) Use the equation to predict Texas' population in 2010.

45) The graph below shows median home value, y, every ten years beginning in 1940. All values have been adjusted for inflation and are measured in 2000 dollars. In other words, the values are measured in what a dollar was worth in the year 2000. (Source: www.census.gov).

Median Home Values



Year (x = 0 corresponds to 1939)

a) Find a linear equation for the line.

b) Predict the median home value (in 2000 dollars) in the year 2010 (to the nearest hundred).

Answers:

1) a) x - int: (3, 0); y - int: (0, – 1) b) $m = \frac{1}{3}$ c) $y = \frac{1}{3}x - 1$

2) a) x - int: (3, 0); y - int: (0, 4) b) $m = -\frac{4}{3}$ c) $y = -\frac{4}{3}x + 4$

3) a) x - int: none; y - int: (0, – 4) b) m = 0 c) y = – 4

4) a) x - int: (2, 0); y - int: (0, 2) b) N/A c) N/A

5) a) x - int: (– 5, 0) & (5, 0); y - int: (0, – 5) & (0, 5) b) N/A c) N/A

6) a) x - int: (0, 0); y - int: (0, 0) b) $m = -\frac{3}{2}$ c) $y = -\frac{3}{2}x$

7) a) x - int: none; y - int: (0, 3) b) N/A c) N/A

8) a) x - int: (– 3, 0); y - int: none b) m = undefined c) x = – 3 (Slope - intercept is not applicable here.)

9) a) x - int: (– 2, 0) & (2, 0); y - int: (0, 4) b) N/A c) N/A

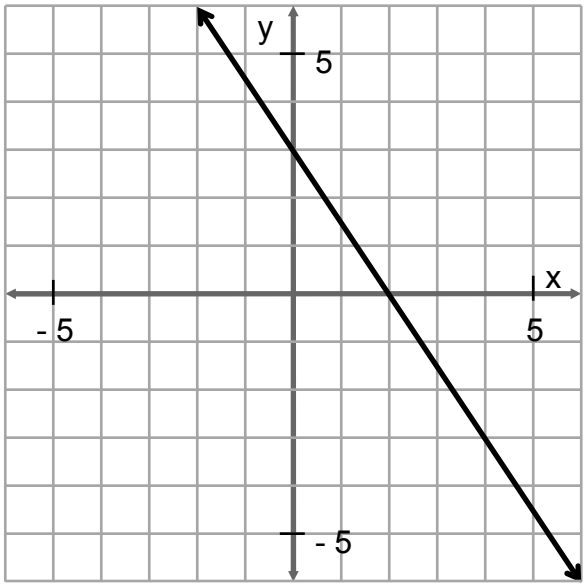
10) a) x - int: (24, 0); y - int: (0, 4) b) $m = -\frac{1}{6}$ c) $y = -\frac{1}{6}x + 4$ 11) $y = 6$

12) $y = \frac{1}{7}x + \frac{13}{7}$ 13) $x = 4$ 14) $y = 11x + 29$ 15) $y = \frac{1}{2}x + 4$ 16) $y = -4x - 0.7$

17) $m = -\frac{3}{4}$; y - int: (0, 2) 18) $m = \frac{1}{4}$; y - int: (0, – 3) 19) m = 0; y - int: (0, 7)

20) $m = -\frac{1}{3}$; y - int: (0, 2) 21) m = 6; y - int: (0, – 2) 22) m is undefined; no y - int.

23)



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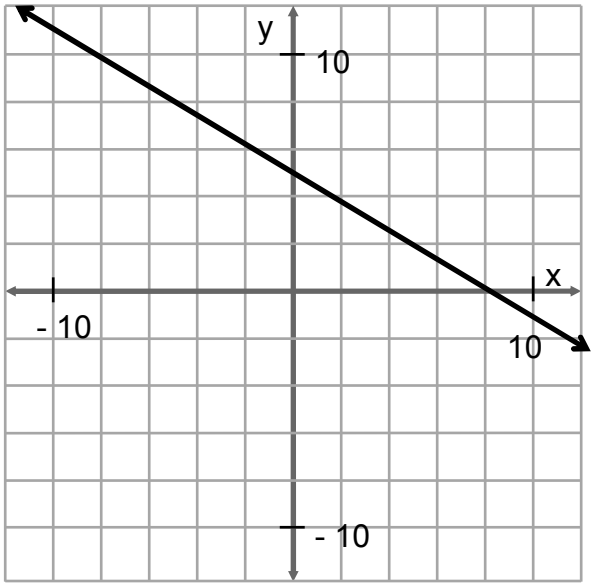

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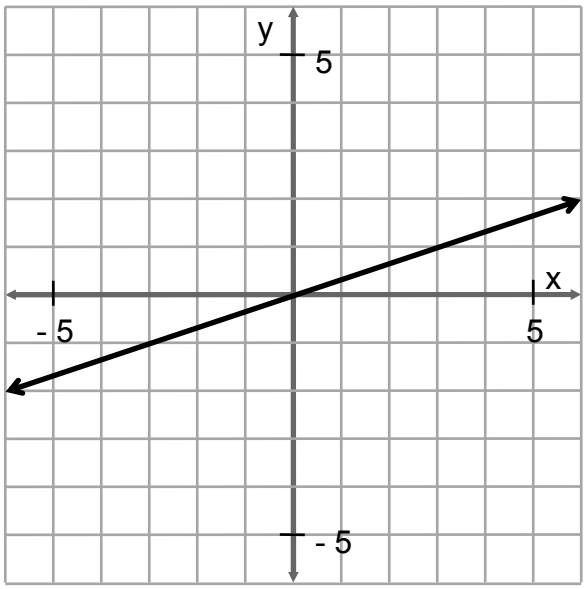

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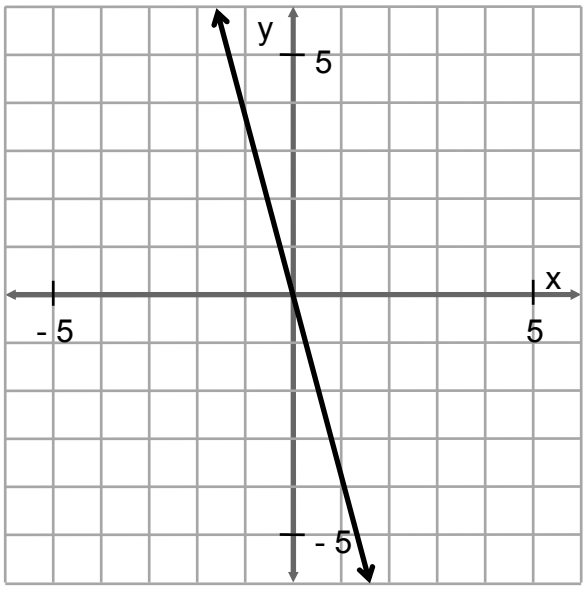

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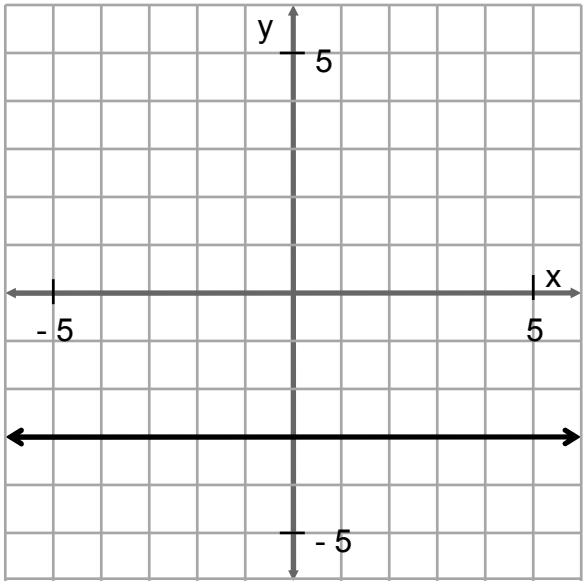

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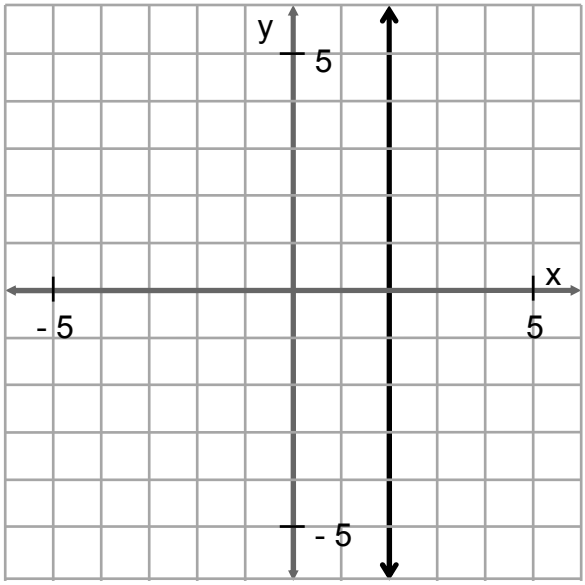

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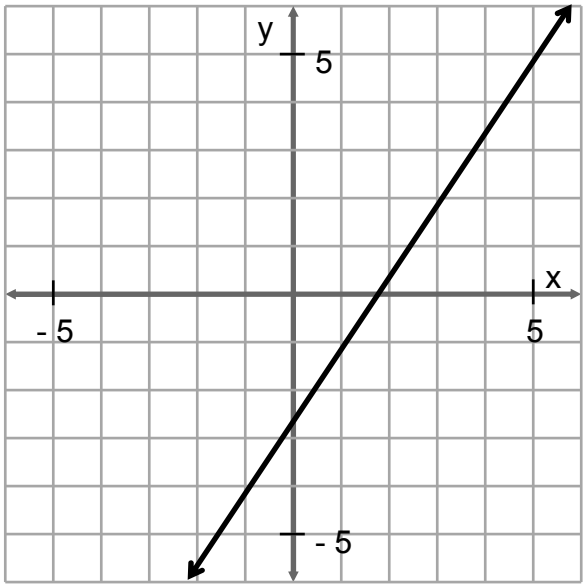

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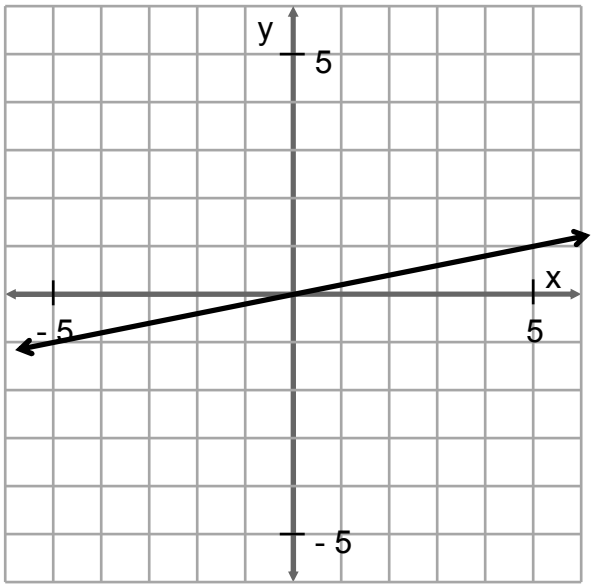

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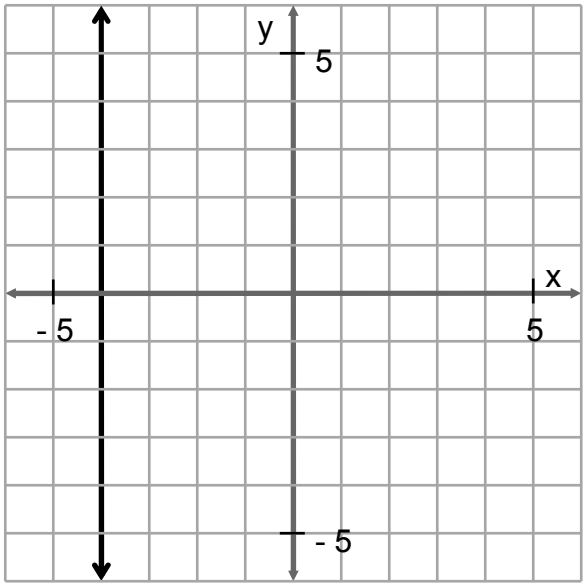

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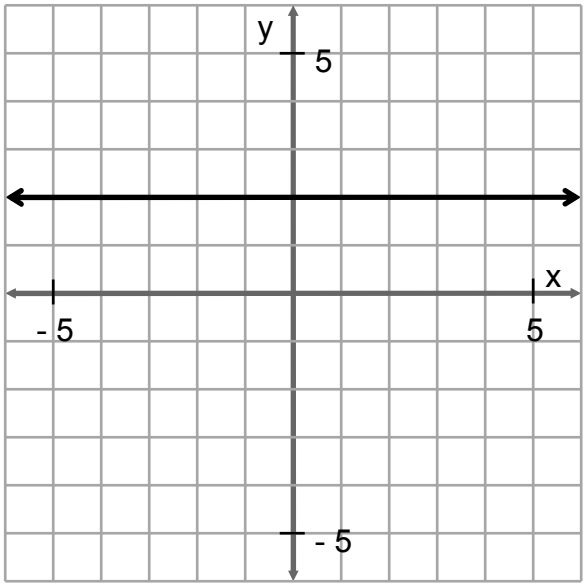
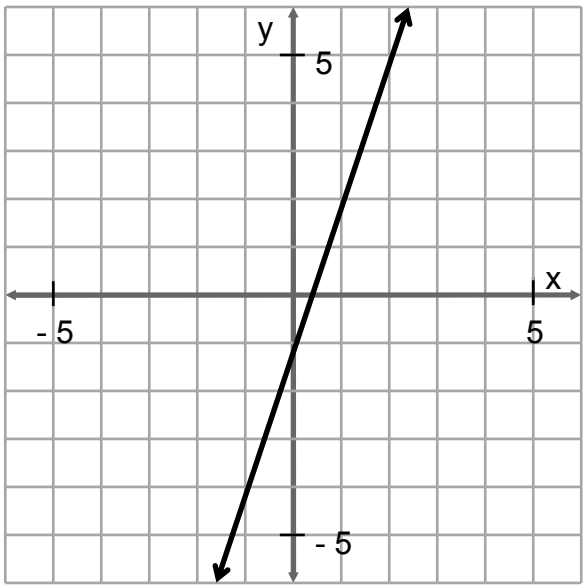
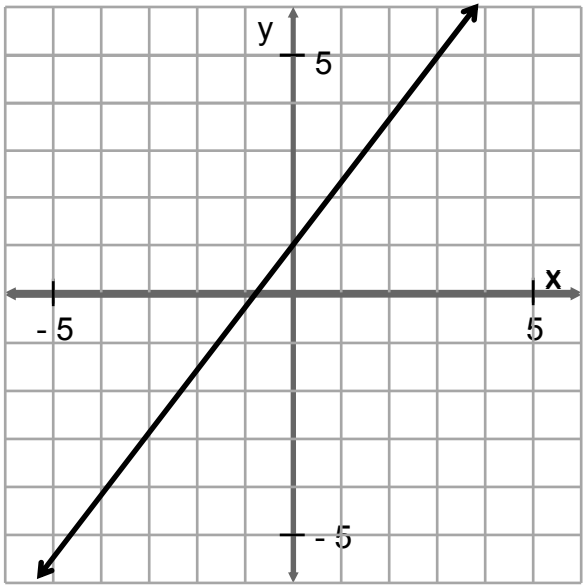


33) 

34) 

35) $y = \frac{3}{4}x - 2$ 36) $y = 3x - 6$ 37) $y = 2$ 38) $y = -\frac{3}{7}x - \frac{5}{7}$

39) $y = -\frac{3}{4}x - 1.5$ 40) $x = -5$ 41a) $y = 0.55x + 1.25$ 41b) The cost is \$5.65.

42a) x-the number of years after 2001 is the independent variable.

42b) y-the total consumer debt in billions of dollars is the dependent variable.

42c) The debt is ≈ \$2183.2 billion.

42d) The consumer debt is increasing at a rate of ≈ \$103.37 billion per year.

43a) $y = 0.04x + 2.45$ 43b) It will cost \$8.81 44a) $m = 331.15$

44b) Texas' population is increasing at a rate of ≈ 331,500 people per year.

44c) $y = 331.15x + 13897.85$ 44d) The population will be ≈ 24,163,500 people.

45a) $y = \frac{4250}{3}x + 28850$ 45b) The median home value will be ≈ \$129,400.