

ALEKS® Math 100 Mock Final #1

Beginning Algebra / Math 100 – Master No Book (Prof. Miller)

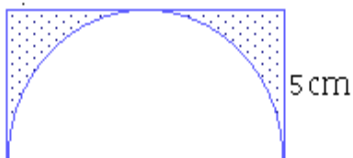
Student Name/ID:

1. Factor.

$$y^2 - 10y + 16$$

2. A rectangle is placed around a semicircle as shown below. The width of the rectangle is 5 cm

Find the area of the shaded region. Use the value 3.14 for π and do not round your answer. Be sure to include the correct unit in your answer.



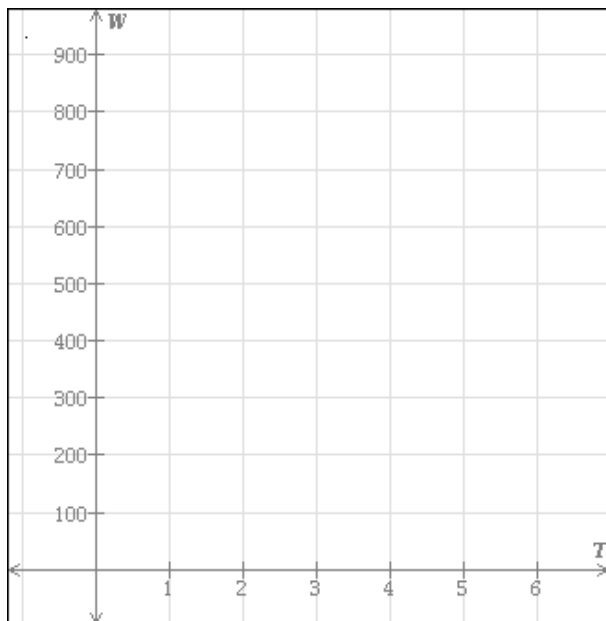
3. Calculate.

$$\frac{7 \times 10^8}{2 \times 10^5}$$

Write your answer in scientific notation.

4. Owners of a recreation area are filling a small pond with water. They are adding water at a rate of 35 liters per minute. There are 700 liters in the pond to start.

Let W represent the amount of water in the pond (in liters), and let T represent the number of minutes that water has been added. Write an equation relating W to T and then graph your equation using the axes below.



5. Solve for x

$$-2(8x - 5) + 2x = 4(x + 5)$$

Simplify your answer as much as possible.

6. Rewrite the expression without using a negative exponent.

$$4v^{-4}$$

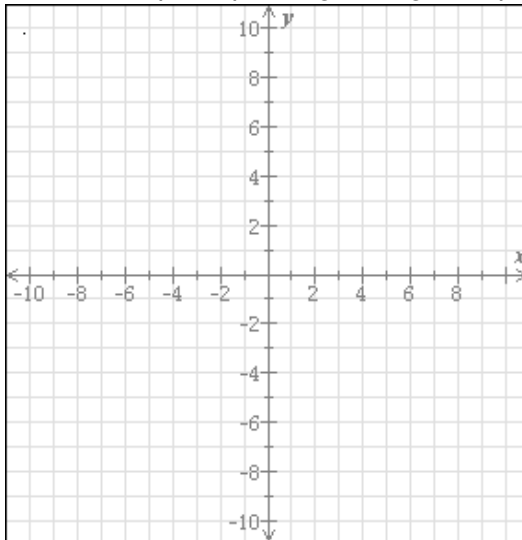
Simplify your answer as much as possible.

7. Solve for y .

$$5(y + 5) - 8y = 31$$

Simplify your answer as much as possible.

8. Graph the line with slope 3 passing through the point $(2, -1)$



9. Evaluate the expression when $c = -6$

$$c^2 + 7c + 4$$

10. Multiply.

$$(u + 1)(u - 5)$$

Simplify your answer.

11. Solve for w

$$-21 = -\frac{3}{7}w$$

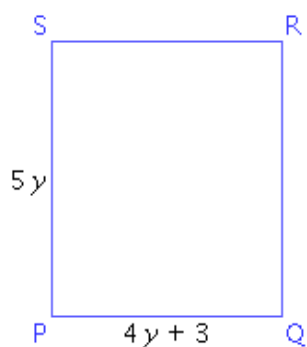
Simplify your answer as much as possible.

12. Evaluate the expression when $c = 5$ and $y = -6$

$$-c + 9y$$

13. The perimeter of the rectangle below is 132 units. Find the length of side \overline{PS}

Write your answer without variables.



14. Factor completely.

$$9x^5 + 24x^4 + 12x^3$$

15. Simplify.

$$2vx^{-2} \cdot 7v^{-1} \cdot 4u^7u^{-1}x^{-4}$$

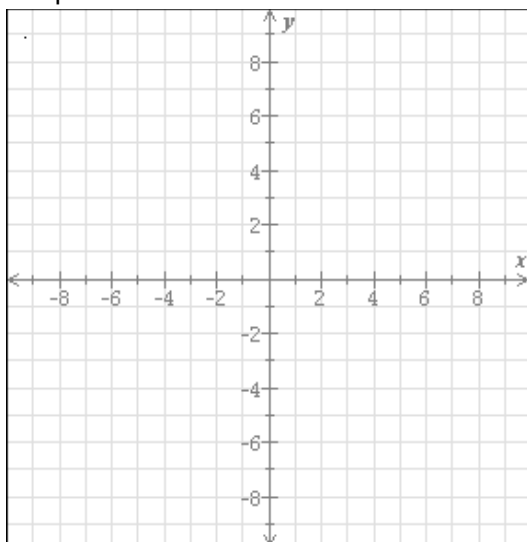
Use only positive exponents in your answer.

16. Evaluate.

$$(1 - 2^3)^2 + 5 \cdot 4$$

17. Find the slope of the line passing through the points $(-9, -6)$ and $(-4, 5)$

18. Graph the line $x = -1$



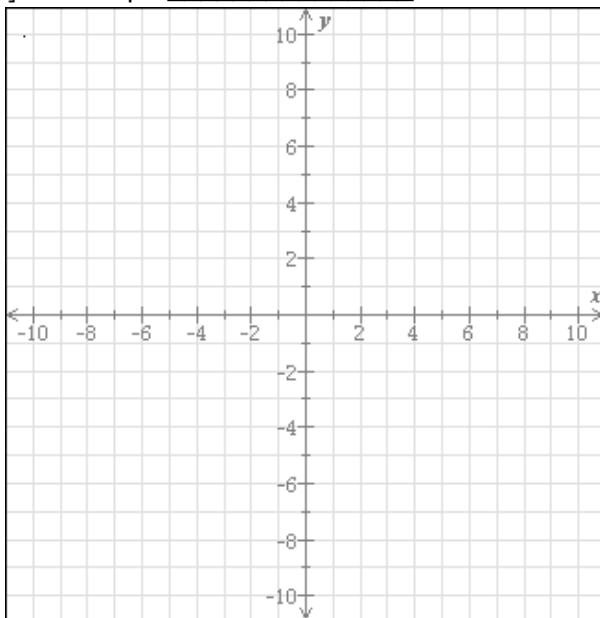
19. The equation of a line is given below.

$$-3x - 5y = -15$$

Find the slope and the y -intercept.
Then use them to graph the line.

slope: _____

y -intercept: _____



20. Consider the line $y = \frac{3}{2}x - 0$

(a) Find the equation of the line that is parallel to this line and passes through the point $(9, 6)$

(b) Find the equation of the line that is perpendicular to this line and passes through the point $(9, 6)$

21. Find an ordered pair (x, y) that is a solution to the equation.

$$2x - y = 3$$

22. Solve for y .

$$9 = \frac{9y+5}{8} + \frac{y-6}{2}$$

Simplify your answer as much as possible.

23. Find the greatest common factor of these two expressions.

$$16y^4u^6v^2 \text{ and } 24u^8v^7$$

24. Factor the following expression.

$$18vw^7y^2 - 24v^4w^9$$

25. The price of a notebook was \$3.70 yesterday. Today, the price fell to \$3.20 Find the percentage decrease. Round your answer to the nearest tenth of a percent.

26. Simplify.

$$-6x - 2(-4y + 2x) - 5y$$

27. Divide.

$$\frac{6x^4 - 12x^3}{2x^2}$$

Simplify your answer as much as possible.

28. Leila purchased a prepaid phone card for \$25. Long distance calls cost 23 cents a minute using this card. Leila used her card only once to make a long distance call. If the remaining credit on her card is \$14.65, how many minutes did her call last?

29. The table gives the temperature (in °F) in five cities at 6 a.m. on the same day. Use the table to answer the questions.

City	Temperature (°F)
Santa Fe	74
Milwaukee	−6
Winnipeg	−16
Nome	−28
Dayton	48

(a) How much higher was the 6 a.m. temperature in Dayton than in Winnipeg?

°F higher

(b) By noon, the temperature in Nome had risen by 12°F.
What was the temperature there at noon?

°F

30. Find the x -intercept and y -intercept of the line.

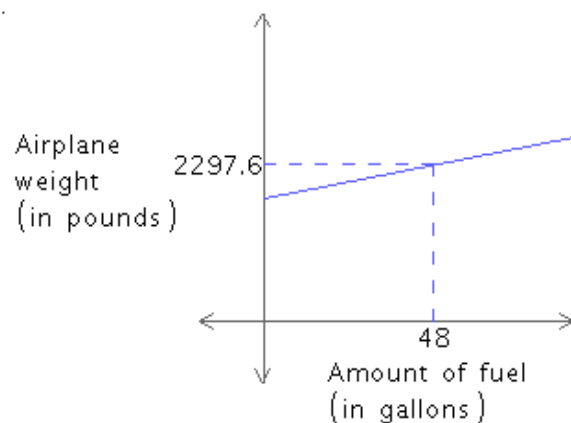
$$6x - 8y = -15$$

x -intercept: _____

y -intercept: _____

31. Suppose that the weight (in pounds) of an airplane is a linear function of the total amount of fuel (in gallons) in its tank. When graphed, the function gives a line with a slope of 6.2. See the figure below.

With 48 gallons of fuel in its tank, the airplane has a weight of 2297.6 pounds. What is the weight of the plane with 77 gallons of fuel in its tank?



32. Lamar has scored 99, 71, 58, and 73 on his previous four tests. What score does he need on his next test so that his average (mean) is 79?

33. Two trains leave stations 504 miles apart at the same time and travel toward each other. One train travels at 95 miles per hour while the other travels at 85 miles per hour. How long will it take for the two trains to meet?

Do not do any rounding.

hours

34. Rewrite without parentheses.

$$(2c^2d^4 - 4d^3)(-5c^6d)$$

Simplify your answer as much as possible.

35. A suit is on sale for 33% off. The sale price is \$335

What is the regular price?

36. At the city museum, child admission is \$5.30 and adult admission is \$8.80. On Wednesday, 154 tickets were sold for a total sales of \$1050.70. How many adult tickets were sold that day?

37. Use the distributive property to remove the parentheses.

$$-5(-y - 4w + 3)$$

38. Evaluate the following.

$$|15| - |10 - 9|$$

39. Simplify.

$$(5w^2 + 9w + 4) + (-2w^2 + 4w + 4) - (-5w^2 + 7w - 5)$$

40. Solve for x

$$y = (x - 8)m$$

41. A washer and a dryer cost \$804 combined. The washer costs \$96 less than the dryer. What is the cost of the dryer?

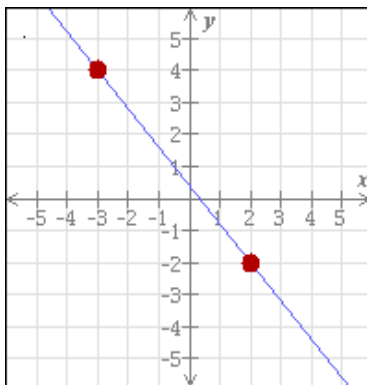
42. Evaluate.

$$4 + 2 \cdot 6^2$$

43. Factor by grouping.

$$5y^3 - 2y^2 - 35y + 14$$

44. Find the slope of the line graphed below.



45. Factor by grouping.

$$wy - 20w + 5y - 4w^2$$

46. Rewrite the following without an exponent.

$$\left(\frac{5}{9}\right)^{-2}$$

47. Mr. Butler has a class of 16 students. He can spend \$24 on each student to buy math supplies for the year. He first buys all of his students calculators, which costs a total of \$99.20 After buying the calculators, how much does he have left to spend on each student?

48. Solve for y .

$$3y - 8 = -20$$

Simplify your answer as much as possible.

49. Simplify.

$$\frac{x^5}{x^{-9}}$$

Write your answer with a positive exponent only.

50. Write equations for the horizontal and vertical lines passing through the point $(-8, 1)$

horizontal line:

vertical line:

51. Evaluate the expressions.

$$\left(-\frac{2}{3}\right)^0 =$$

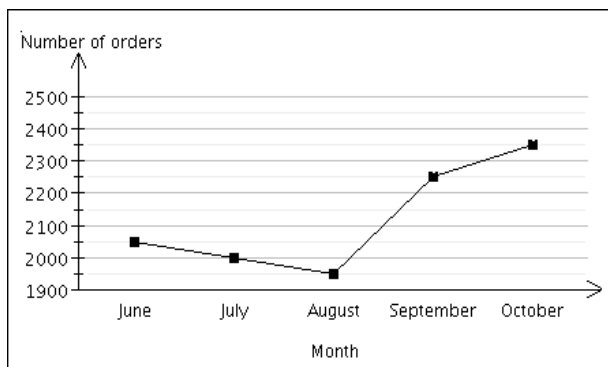
$$-(5)^0 =$$

52. Solve for u

$$-\frac{3}{2} = -\frac{2}{7}u - \frac{9}{5}$$

Simplify your answer as much as possible.

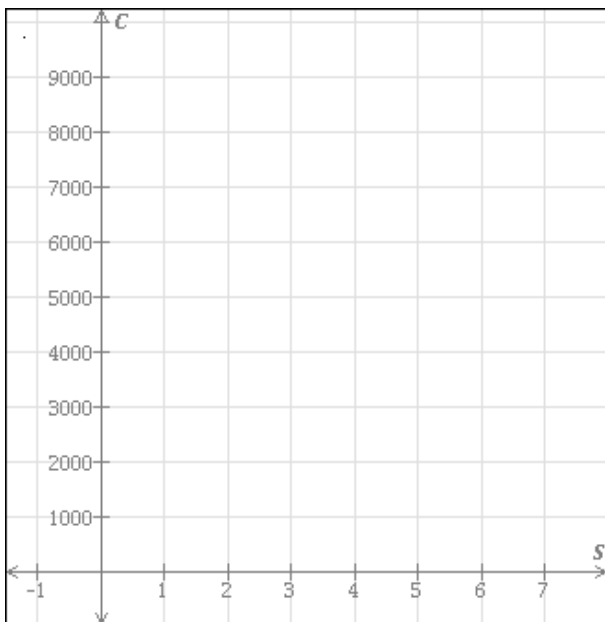
53. The graph below shows the numbers of orders received by a company for five months.



- (a) What was the least number of orders in a month?
- (b) When did the number of orders have the greatest increase?

54. The Sugar Sweet Company is going to transport its sugar to market. It will cost \$7250 to rent trucks, and it will cost an additional \$250 for each ton of sugar transported.

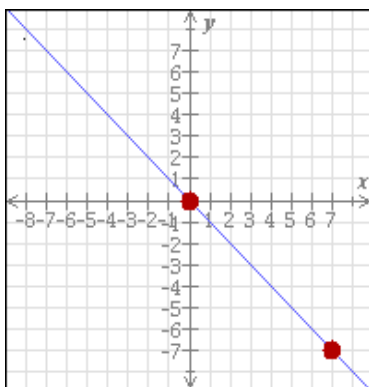
Let C represent the total cost (in dollars), and let S represent the amount of sugar (in tons) transported. Write an equation relating C to S and then graph your equation using the axes below.



55. Simplify the following expression.

$$9x^2 - 4 - 10x^2 + 10 + 3x$$

56. Write an equation of the line below.

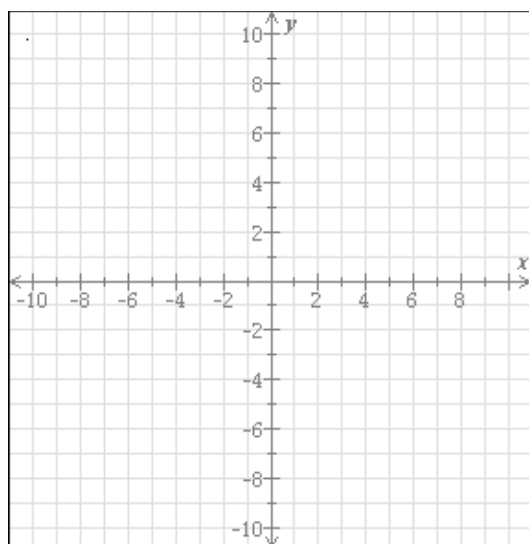


57. Rewrite without parentheses and simplify.

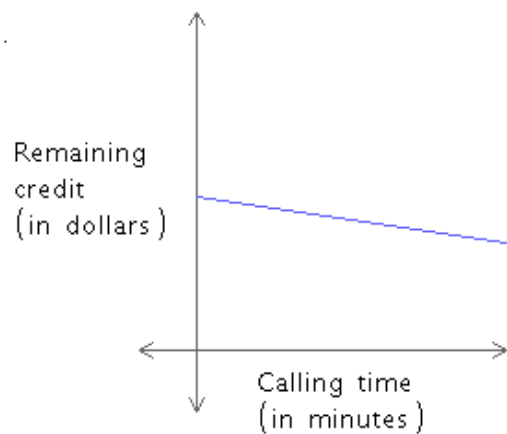
$$(u - 4)^2$$

58. Graph the line.

$$y = -\frac{1}{4}x + 1$$



59. The credit remaining on a phone card (in dollars) is a linear function of the total calling time made with the card (in minutes). The remaining credit after 28 minutes of calls is \$26.64 and the remaining credit after 61 minutes of calls is \$22.68. What is the remaining credit after 67 minutes of calls?



60. Multiply.

$$(u + 7)(u - 7)$$

Simplify your answer.

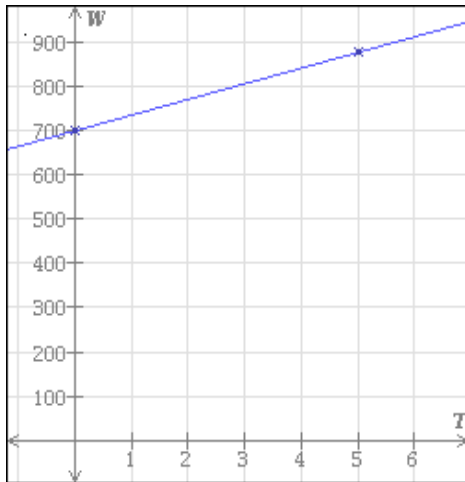
Math 100 Mock Final #1 Answers for class Beginning Algebra / Math 100 – Master No Book

1. $(y - 2)(y - 8)$

2. 10.75 cm^2

3. 3.5×10^3

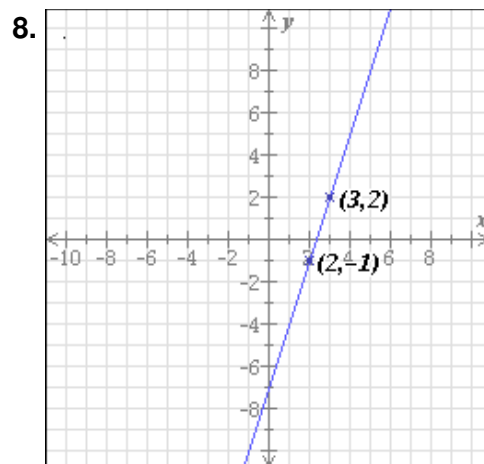
4. $W = 700 + 35T$



5. $x = -\frac{5}{9}$

6. $\frac{4}{v^4}$

7. $y = -2$



9. -2

10. $u^2 - 4u - 5$

11. $w = 49$

12. -59

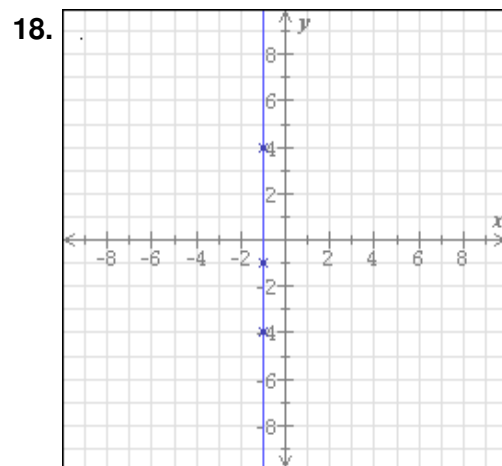
13. $PS = 35$

14. $3x^3(x+2)(3x+2)$

15. $\frac{56u^6}{x^6}$

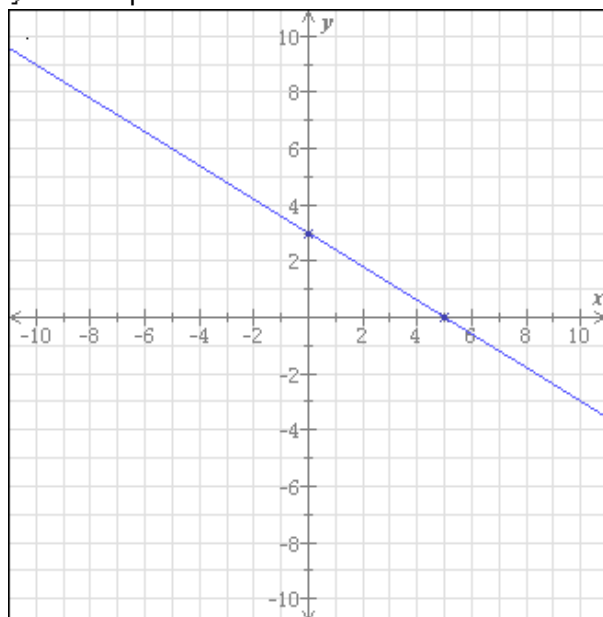
16. 69

17. $\frac{11}{5}$



19. slope: $-\frac{3}{5}$

y-intercept: 3



20. Equation of parallel line: $y = \frac{3}{2}x - \frac{15}{2}$

Equation of perpendicular line: $y = -\frac{2}{3}x + 12$

21. One possible answer is $(x, y) = (0, -3)$

22. $y = 7$

23. $8u^6v^2$

24. $6vw^7(3y^2 - 4v^3w^2)$

25. 13.5%

26. $-10x + 3y$

27. $3x^2 - 6x$

28. 45 minutes

29. (a) How much higher was the 6 a.m. temperature in Dayton than in Winnipeg?

64 °F higher

- (b) By noon, the temperature in Nome had risen by 12 °F.

What was the temperature there at noon?

-16 °F

30. x-intercept: $-\frac{5}{2}$

y-intercept: $\frac{15}{8}$

31. 2477.4 pounds

32. 94

33. 2.8 hours

34. $-10c^8d^5 + 20c^6d^4$

35. \$500

36. 67 tickets

37. $5y + 20w - 15$

38. 14

39. $8w^2 + 6w + 13$

40. $x = \frac{y}{m} + 8$

41. \$450

42. 76

43. $(5y - 2)(y^2 - 7)$

44. $-\frac{6}{5}$

45. $(w + 5)(y - 4w)$

46. $\frac{81}{25}$

47. \$17.80

48. $y = -4$

49. x^{14}

50. horizontal line: $y = 1$
vertical line: $x = -8$

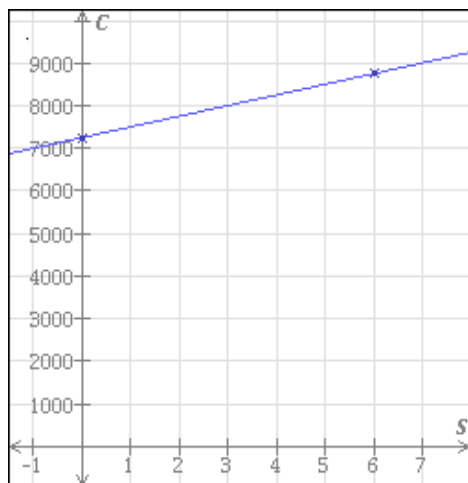
51. $\left(-\frac{2}{3}\right)^0 = 1$
 $-(5)^0 = -1$

52. $u = -\frac{21}{20}$

53. (a) What was the least number of orders in a month?
1950 orders

(b) When did the number of orders have the greatest increase?
August to September

54. $C = 7250 + 250S$

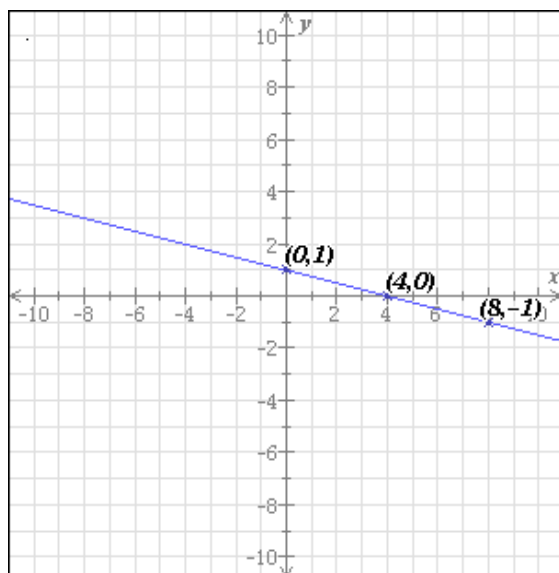


55. $-x^2 + 3x + 6$

56. $y = -x$

57. $u^2 - 8u + 16$

58.



59. \$21.96

60. $u^2 - 49$