

ALEKS® Math 100 Mock Final #2

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

Student Name/ID:

1. Rewrite without parentheses and simplify.

$$(v+6)^2$$

2. Find the slope of the line passing through the points $(2, 5)$ and $(8, -4)$

3. Factor.

$$y^2 + 7y - 18$$

4. The price of a cup of coffee has risen to \$2.70 today. Yesterday's price was \$2.45 Find the percentage increase. Round your answer to the nearest tenth of a percent.

5. Factor completely.

$$9v^7 - 33v^6 + 30v^5$$

6. Rewrite the following without an exponent.

$$\left(\frac{4}{5}\right)^{-2}$$

7. Factor by grouping.

$$5w^3 - 7w^2 - 30w + 42$$

8. Ravi has scored 90, 90, 91, and 92 on his previous four tests. What score does he need on his next test so that his average (mean) is 88?

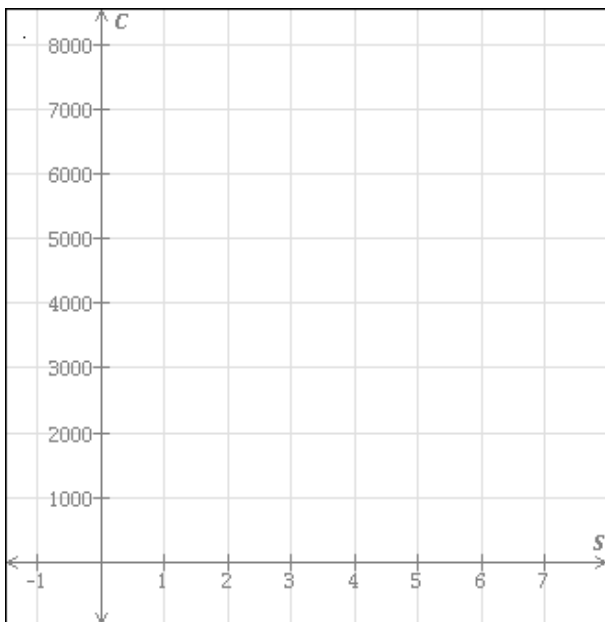
9. Rewrite the expression without using a negative exponent.

$$6v^{-5}$$

Simplify your answer as much as possible.

10. The Sugar Sweet Company is going to transport its sugar to market. It will cost \$5850 to rent trucks, and it will cost an additional \$225 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.



11. Simplify the following expression.

$$-8x^2 + 4 + 10x^2 - 10 - 5x$$

12. Solve for u

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

Simplify your answer as much as possible.

13. Rewrite without parentheses.

$$(8a^6b^4 - 7a^3)(-9ab^5)$$

Simplify your answer as much as possible.

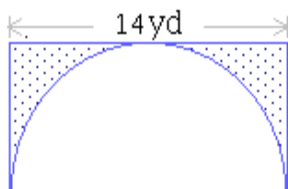
14. Two trains leave stations 520 miles apart at the same time and travel toward each other. One train travels at 110 miles per hour while the other travels at 90 miles per hour. How long will it take for the two trains to meet?

Do not do any rounding.

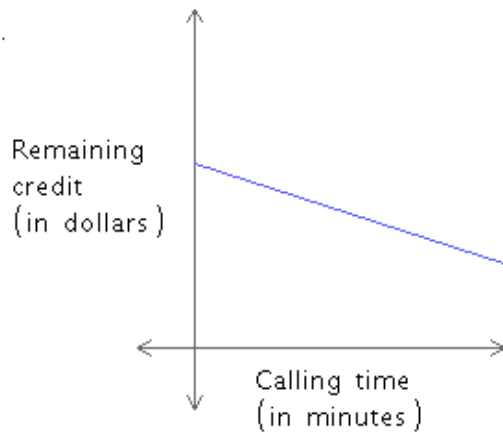
hours

15. A rectangle is placed around a semicircle as shown below. The length of the rectangle is 14 yd

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.



16. 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 32 minutes of calls is \$25.20 and the remaining credit after 66 minutes of calls is \$20.10. What is the remaining credit after 70 minutes of calls?



17. Charmaine bought a table on sale for \$639. This price was 29% less than the original price.

What was the original price?

18. Evaluate the expressions.

$$\left(\frac{4}{9}\right)^0 =$$

$$-(4)^0 =$$

19. Use the distributive property to remove the parentheses.

$$-7(-6x - 4y + 5)$$

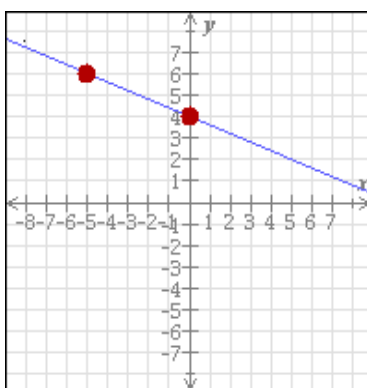
20. Consider the line $y = -5x + 9$

(a) Find the equation of the line that is perpendicular to this line and passes through the point $(3, 6)$

(b) Find the equation of the line that is parallel to this line and passes through the point $(3, 6)$

21. A total of 584 tickets were sold for the school play. They were either adult tickets or student tickets. The number of student tickets sold was three times the number of adult tickets sold. How many adult tickets were sold?

22. Write an equation of the line below.



23. Lamar rented a truck for one day. There was a base fee of \$20.99 and there was an additional charge of 76 cents for each mile driven. Lamar had to pay \$178.31 when he returned the truck. For how many miles did he drive the truck?

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

$$-9x + 8y = 10$$

x -intercept: _____

y -intercept: _____

25. Solve for w

$$-2(6w - 8) + 9w = 3(w + 6)$$

Simplify your answer as much as possible.

26. Calculate.

$$\frac{9 \times 10^6}{2 \times 10^4}$$

Write your answer in scientific notation.

27. Simplify.

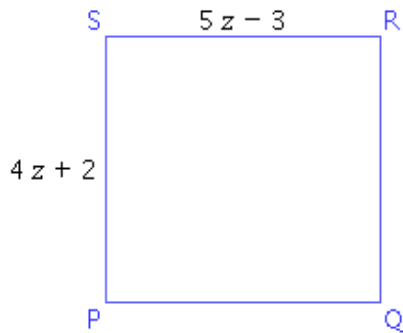
$$4w - 6(-4z + 5w) - 6z$$

28. Evaluate the expression when $b = -7$ and $c = 4$

$$b - 5c$$

29. The perimeter of the rectangle below is 142 units. Find the length of side \overline{QR}

Write your answer without variables.



30. Evaluate.

$$-\left(2 - (-1)^2\right)^2 - 3 \cdot 4$$

31. At the movie theatre, child admission is \$5.10 and adult admission is \$8.70. On Sunday, 138 tickets were sold for a total sales of \$995.40. How many adult tickets were sold that day?

32. Evaluate the expression when $y = -2$

$$y^2 + 5y + 7$$

33. Multiply.

$$(v - 3)(v + 4)$$

Simplify your answer.

34. Raina is riding in a bike race that goes through a valley and a nearby mountain range.

The table gives the altitude (in feet above sea level) for the five checkpoints in the race. Use the table to answer the questions.

Checkpoint	Altitude (feet above sea level)
1	1,347
2	-136
3	-177
4	2,318
5	-62

- (a) The top of a hill rises 160 feet above Checkpoint 3. What is the altitude of the top of the hill?

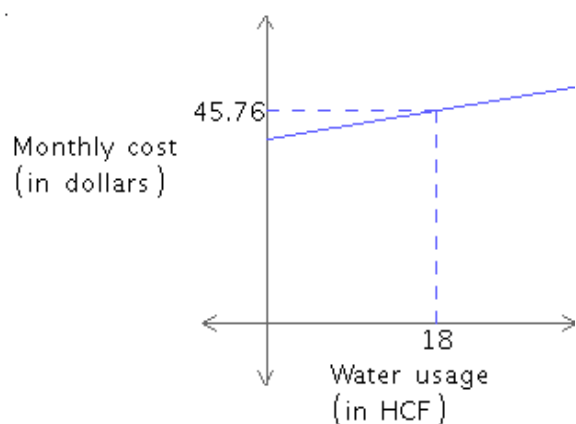
ft

- (b) How much lower is Checkpoint 2 than Checkpoint 5?

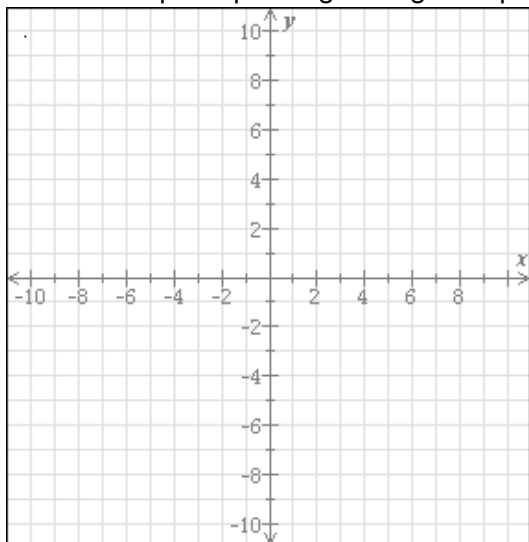
ft lower

35. Suppose that a household's monthly water bill (in dollars) is a linear function of the amount of water the household uses (in hundreds of cubic feet, HCF). When graphed, the function gives a line with a slope of 1.35. See the figure below.

If the monthly cost for 18 HCF is \$45.76, what is the monthly cost for 12 HCF?



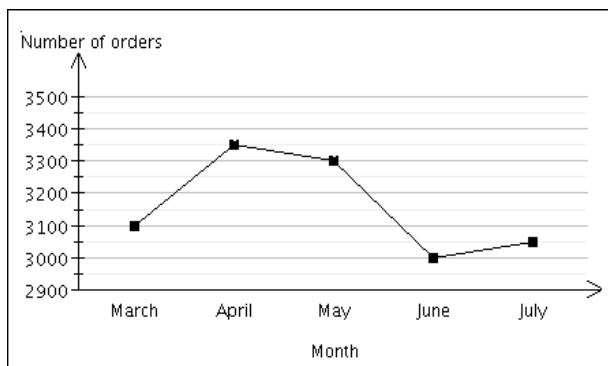
36. Graph the line with slope 1 passing through the point $(-1, 2)$



37. Factor by grouping.

$$7v - 3u^2 - uv + 21u$$

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



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

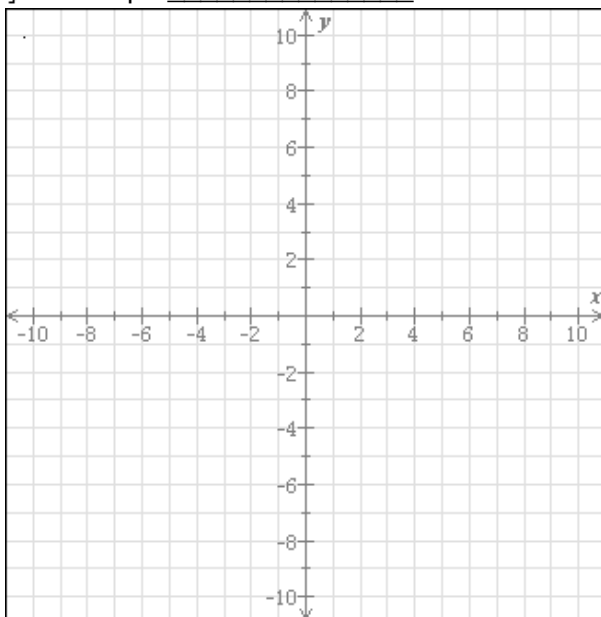
39. The equation of a line is given below.

$$4x + 5y = 20$$

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

slope: _____

y -intercept: _____



40. Multiply.

$$(z - 6)(z + 6)$$

Simplify your answer.

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

$$x - 6y = 6$$

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

$$24v^7u^3 \text{ and } 20v^6u^8w^5$$

43. Solve for x

$$z = (5 + x)k$$

44. Simplify.

$$\frac{x^{-4}}{x^{-2}}$$

Write your answer with a positive exponent only.

45. Evaluate.

$$16 + 6^2 \div 4$$

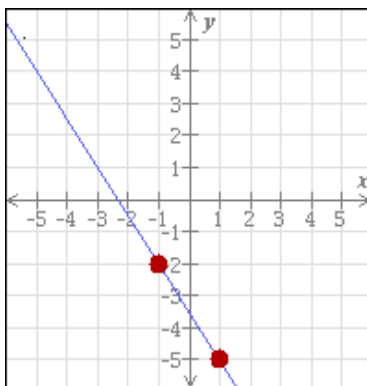
46. Factor the following expression.

$$18u^9v^8 + 30u^2v^2x^5$$

47. Evaluate the following.

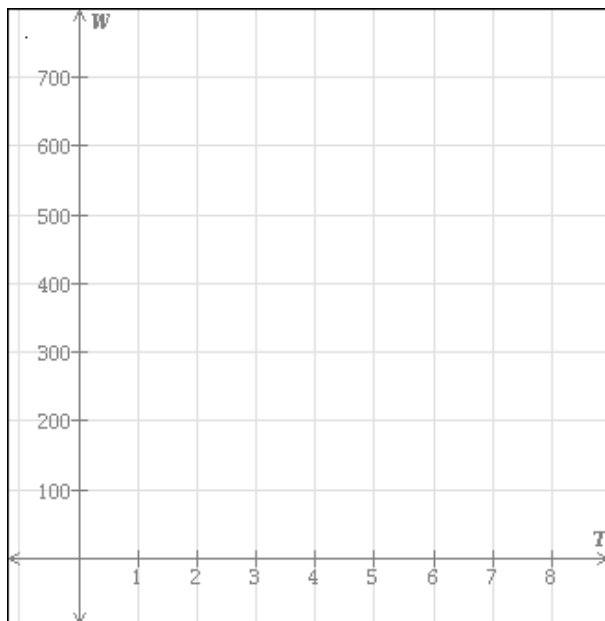
$$|1| - |8 - 11|$$

48. Find the slope of the line graphed below.



49. Owners of a recreation area are filling a small pond with water. They are adding water at a rate of 30 liters per minute. There are 500 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.



50. Write equations for the vertical and horizontal lines passing through the point $(-3, -1)$

vertical line:

horizontal line:

51. Divide.

$$\frac{16v^6 - 20v^3}{4v^3}$$

Simplify your answer as much as possible.

52. Mr. Ward has a class of 14 students. He can spend \$20 on each student to buy math supplies for the year. He first buys all of his students calculators, which costs a total of \$139.02 After buying the calculators, how much does he have left to spend on each student?

53. Solve for x

$$-\frac{7}{9}x = -49$$

Simplify your answer as much as possible.

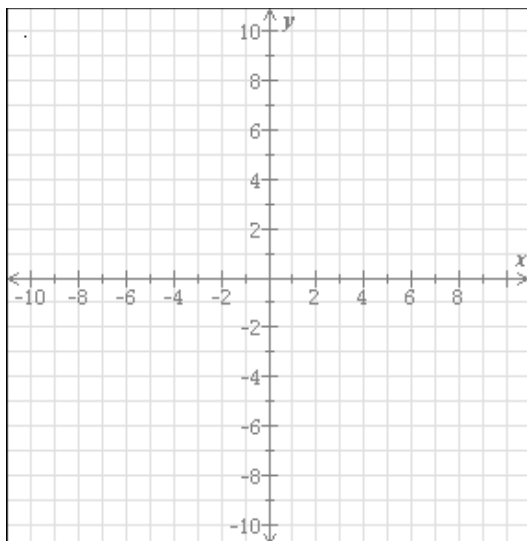
54. Simplify.

$$8v^6x^{-5}y^{-4} \cdot 4xy^5 \cdot 2v^{-2}$$

Use only positive exponents in your answer.

55. Graph the line.

$$y = -\frac{4}{3}x + 8$$



56. Solve for y .

$$12 = \frac{9y - 2}{4} + \frac{9y - 8}{8}$$

Simplify your answer as much as possible.

57. Simplify.

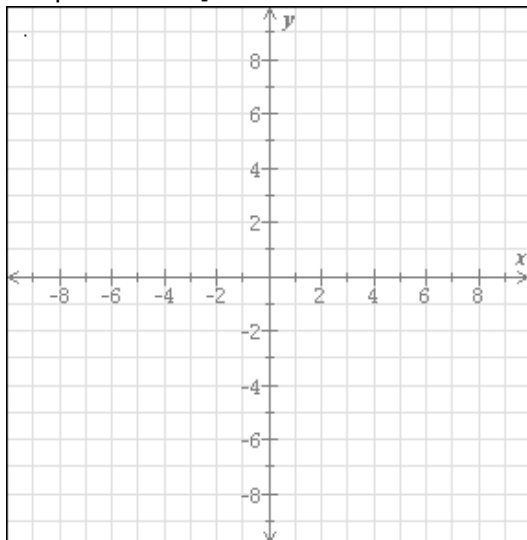
$$(7u^2 - 6u + 9) - (9u^2 - 8u + 2) + (7u^2 + 9u + 8)$$

58. Solve for y .

$$6(y+8) - 8y = 34$$

Simplify your answer as much as possible.

59. Graph the line $y = 3$



60. Solve for x .

$$5 + 4x = -23$$

Simplify your answer as much as possible.

Math 100 Mock Final #2 Answers for class Beginning Algebra / Math 100 – Master No Book

1. $v^2 + 12v + 36$

2. $-\frac{3}{2}$

3. $(y-2)(y+9)$

4. 10.2%

5. $3v^5(v-2)(3v-5)$

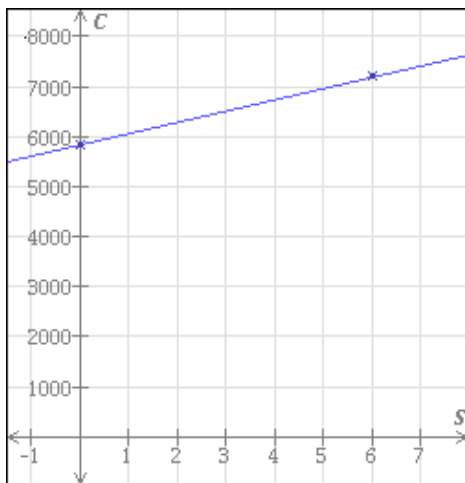
6. $\frac{25}{16}$

7. $(5w-7)(w^2-6)$

8. 77

9. $\frac{6}{v^5}$

10. $C = 5850 + 225S$



11. $2x^2 - 5x - 6$

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

13. $-72a^7b^9 + 63a^4b^5$

14. 2.6 hours

15. 21.07 yd^2

16. \$19.50

17. \$900

18. $\left(\frac{4}{9}\right)^0 = 1$
 $-(4)^0 = -1$

19. $42v + 28y - 35$

20. Equation of perpendicular line: $y = \frac{1}{5}x + \frac{27}{5}$
Equation of parallel line: $y = -5x + 21$

21. 146 adult tickets

22. $y = -\frac{2}{5}x + 4$

23. 207 miles

24. x-intercept: $-\frac{10}{9}$
y-intercept: $\frac{5}{4}$

25. $w = -\frac{1}{3}$

26. 4.5×10^2

27. $-26w + 18z$

28. -27

29. $QR = 34$

30. -13

31. 81 tickets

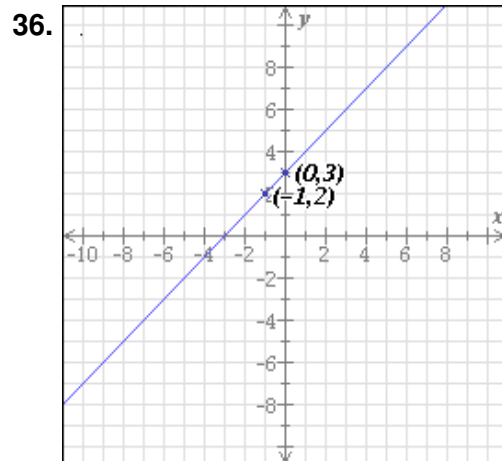
32. 1

33. $v^2 + v - 12$

34. (a) The top of a hill rises 160 feet above Checkpoint 3.
What is the altitude of the top of the hill?
-17 ft

- (b) How much lower is Checkpoint 2 than
Checkpoint 5?
74 ft lower

35. \$37.66



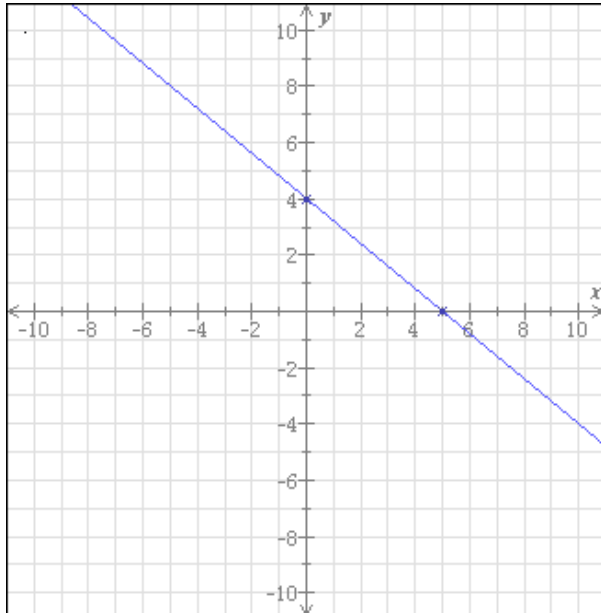
37. $(7 - u)(v + 3u)$

38. (a) What was the greatest number of orders in a month?
3350 orders

- (b) When did the number of orders have the greatest decrease?
May to June

39. slope: $-\frac{4}{5}$

y-intercept: 4



40. $z^2 - 36$

41. One possible answer is $(x, y) = (6, 0)$

42. $4v^6u^3$

43. $x = \frac{z}{k} - 5$

44. $\frac{1}{x^2}$

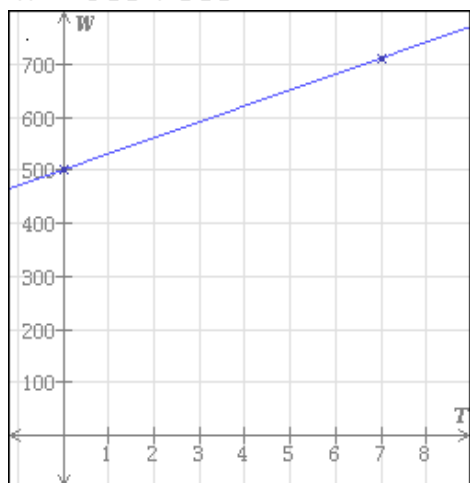
45. 25

46. $6u^2v^2(3u^7v^6 + 5x^5)$

47. -2

48. $-\frac{3}{2}$

49. $W = 500 + 30T$



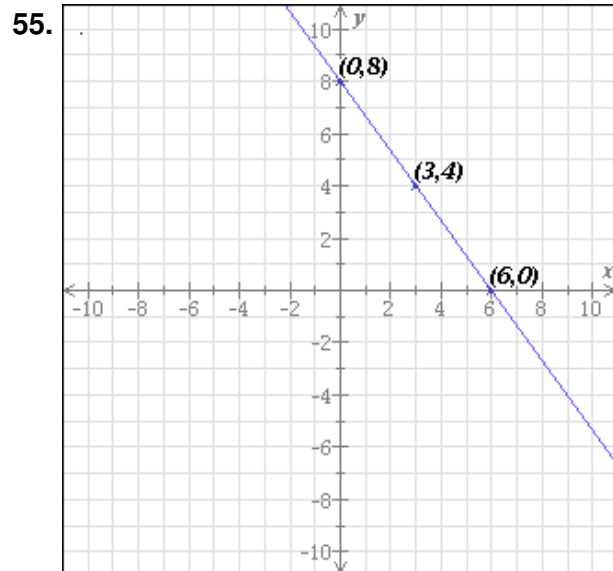
50. vertical line: $x = -3$
horizontal line: $y = -1$

51. $4v^3 - 5$

52. \$10.07

53. $x = 63$

54. $\frac{64v^4y}{x^4}$

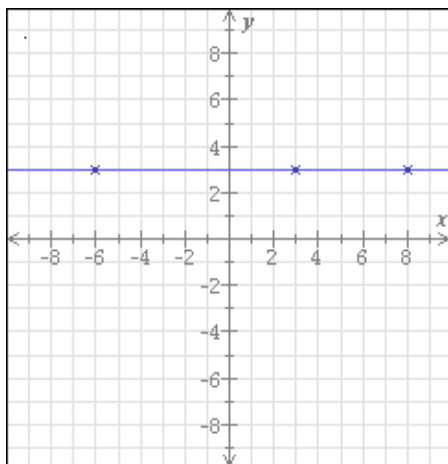


56. $y = 4$

57. $5u^2 + 11u + 15$

58. $y = 7$

59.



60. $x = -7$