

ALEKS® Math 100 Mock Final #4

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

Student Name/ID:

1. The table gives the temperature (in $^{\circ}\text{F}$) in five cities at 6 a.m. on the same day. Use the table to answer the questions.

City	Temperature ($^{\circ}\text{F}$)
Boston	-4
Fairbanks	-32
St. Louis	38
Orlando	67
Toronto	-19

- (a) By noon, the temperature in Fairbanks had risen by 17°F .
What was the temperature there at noon?
 $^{\circ}\text{F}$
- (b) How much higher was the 6 a.m. temperature in Orlando than in Boston?
 $^{\circ}\text{F}$ higher

2. The equation of a line is given below.

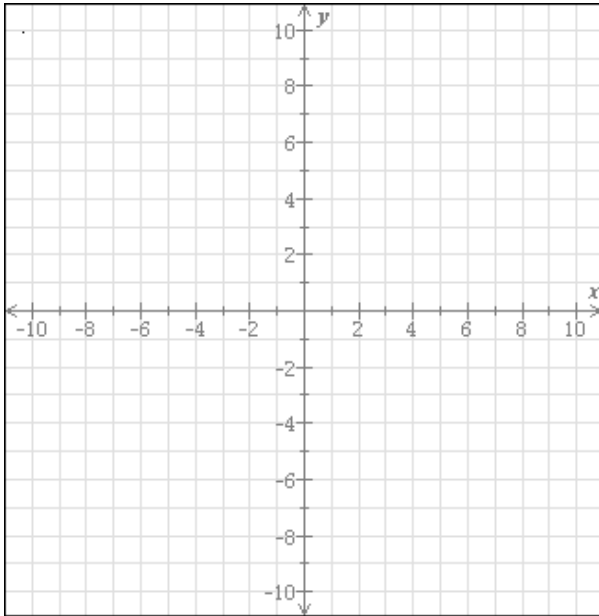
$$-4x - 2y = 8$$

Find the slope and the y -intercept.

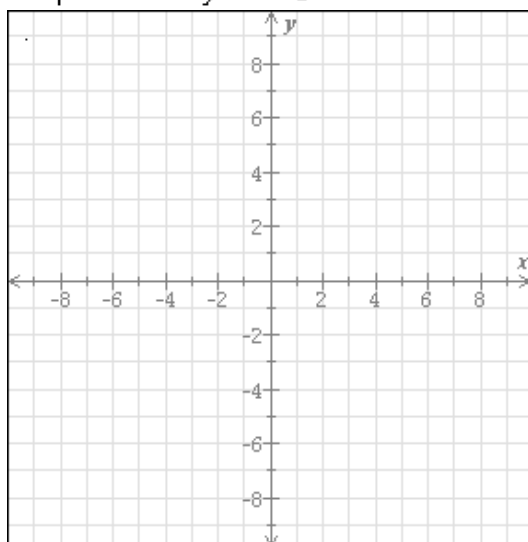
Then use them to graph the line.

slope: _____

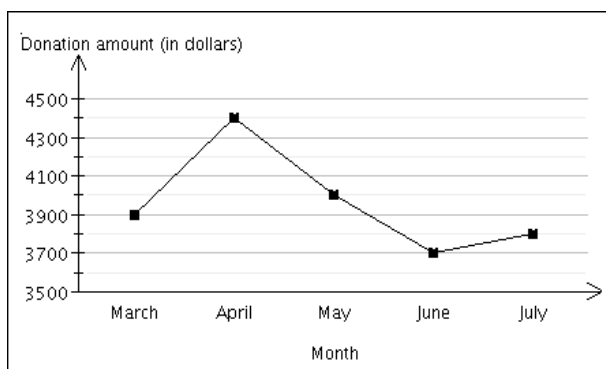
y -intercept: _____



3. Graph the line $y = -1$



4. The graph below shows how much money was given to a charity over five months.



- (a) What was the greatest donation amount in a month?
- (b) When did the greatest increase in donations occur?

5. Evaluate.

$$9 + 27 \div 3^2$$

6. Factor the following expression.

$$28w^6x^2y^7 - 12w^9x^9$$

7. Rewrite without parentheses.

$$-7bc^3(3b^4 - 8b^5c^6 + 9c^6)$$

Simplify your answer as much as possible.

8. Solve for w .

$$-9 = -7w + 3(w - 7)$$

Simplify your answer as much as possible.

9. Simplify.

$$-5y - 6(4z - 3y) - 4z$$

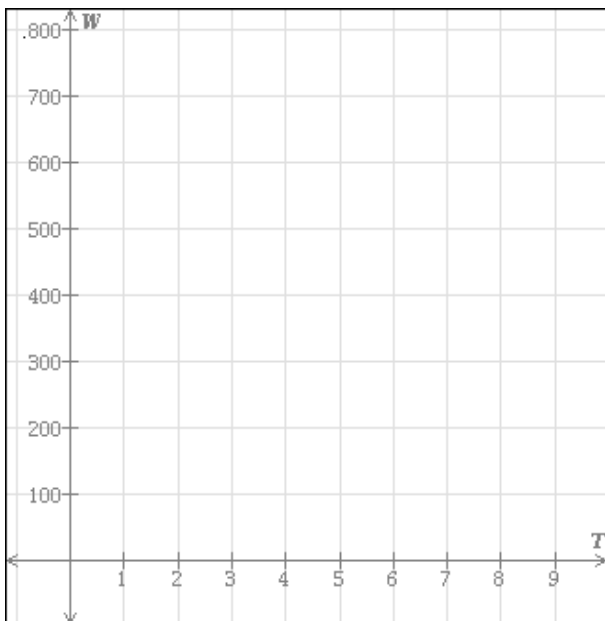
10. Solve for y

$$15 = -\frac{5}{8}y$$

Simplify your answer as much as possible.

11. 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.



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

$$28u^5w^3y^8 \text{ and } 24w^7y^4$$

13. Consider the line $y = -\frac{5}{3}x + 5$

- (a) Find the equation of the line that is perpendicular to this line and passes through the point $(-5, -4)$
- (b) Find the equation of the line that is parallel to this line and passes through the point $(-5, -4)$

14. Evaluate the expressions.

$$(-7)^0 =$$

$$2\left(\frac{2}{5}\right)^0 =$$

15. Solve for u .

$$\frac{7u+3}{4} = \frac{8u-7}{7} + 6$$

Simplify your answer as much as possible.

16. Divide.

$$\frac{14z^7 - 18z^5}{2z^3}$$

Simplify your answer as much as possible.

17. Simplify.

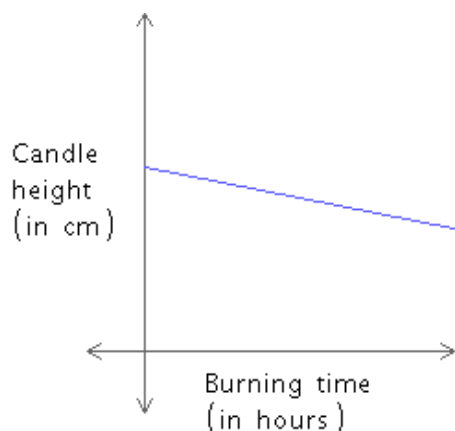
$$\frac{y^7}{y^{-8}}$$

Write your answer with a positive exponent only.

18. Factor.

$$z^2 - 3z - 18$$

19. Suppose that the height (in centimeters) of a candle is a linear function of the amount of time (in hours) it has been burning. After 13 hours of burning, a candle has a height of 20.5 centimeters. After 27 hours of burning, its height is 13.5 centimeters. What is the height of the candle after 16 hours?



20. Write equations for the horizontal and vertical lines passing through the point $(-9, 3)$

horizontal line:

vertical line:

21. Hong has scored 70, 67, 65, 67, and 84 on his previous five tests. What score does he need on his next test so that his average (mean) is 71?

22. Factor by grouping.

$$2v^3 - 3v^2 - 14v + 21$$

23. Evaluate.

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

24. A suit is on sale for 34% off. The sale price is \$495

What is the regular price?

25. The price of a notebook was \$3.75 yesterday. Today, the price fell to \$3.50 Find the percentage decrease. Round your answer to the nearest tenth of a percent.

26. Two trains leave the station at the same time, one heading east and the other west. The eastbound train travels at 75 miles per hour. The westbound train travels at 95 miles per hour. How long will it take for the two trains to be 442 miles apart?

Do not do any rounding.

hours

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

$$6x - 7y = -9$$

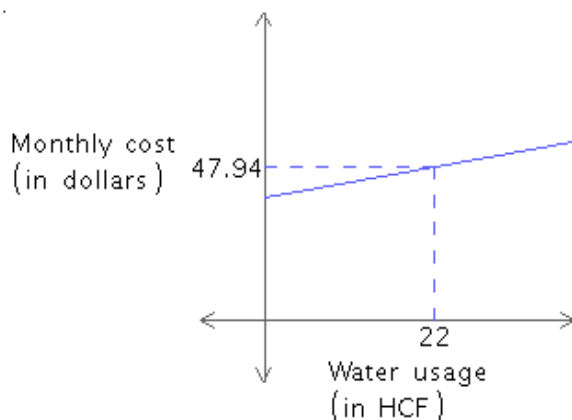
x -intercept: _____

y -intercept: _____

28. Ashley purchased a prepaid phone card for \$30. Long distance calls cost 21 cents a minute using this card. Ashley used her card only once to make a long distance call. If the remaining credit on her card is \$24.54, how many minutes did her call last?

29. 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 1.55. See the figure below.

If the monthly cost for 22 HCF is \$47.94, what is the monthly cost for 18 HCF?

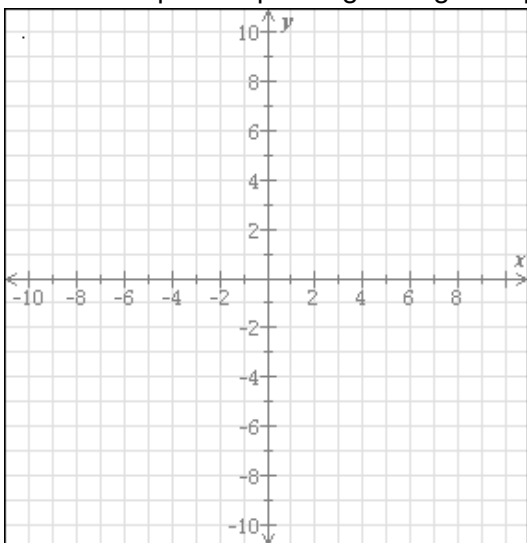


30. Rewrite the expression without using a negative exponent.

$$\frac{1}{3p^{-4}}$$

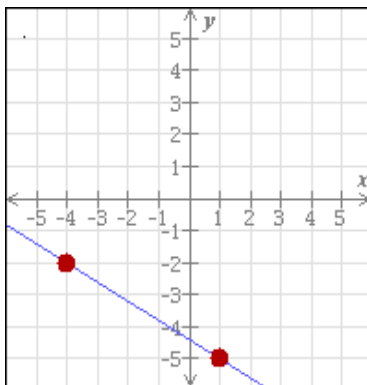
Simplify your answer as much as possible.

31. Graph the line with slope -1 passing through the point $(2, 4)$



32. Find the slope of the line passing through the points $(-4, -3)$ and $(8, -9)$

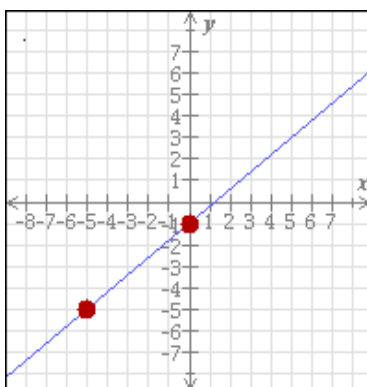
33. Find the slope of the line graphed below.



34. Use the distributive property to remove the parentheses.

$$-4(-6y + 2v - 3)$$

35. Write an equation of the line below.



36. Simplify.

$$(8v^2 - 5v - 7) + (3v^2 + 3v - 3) - (-9v^2 + 3v + 9)$$

37. Evaluate the following.

$$|-3| - |11 - 14|$$

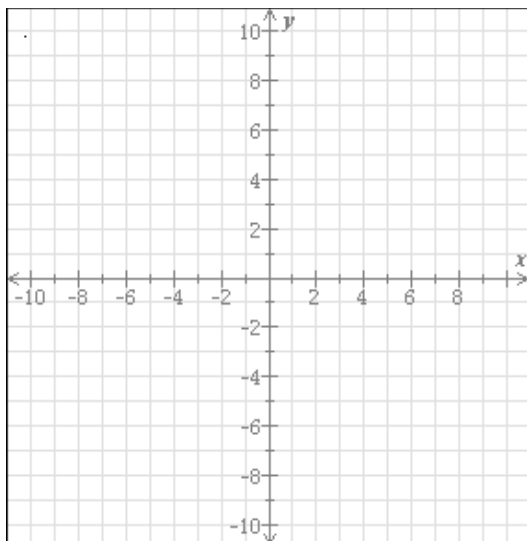
38. Solve for w .

$$-24 = -6 + 3w$$

Simplify your answer as much as possible.

39. Graph the line.

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



40. A washer and a dryer cost \$896 combined. The washer costs \$54 less than the dryer. What is the cost of the dryer?

41. Rewrite without parentheses and simplify.

$$(w + 5)^2$$

42. Multiply.

$$(x + 8)(x - 8)$$

Simplify your answer.

43. Solve for w

$$-\frac{1}{5}w - \frac{7}{3} = -\frac{5}{2}$$

Simplify your answer as much as possible.

44. Evaluate the expression when $n = -6$

$$n^2 + 5n - 4$$

45. Solve for x

$$y = 7(x + 4)$$

46. A Web music store offers two versions of a popular song. The size of the standard version is 2.7 megabytes (MB). The size of the high-quality version is 4.2 MB. Yesterday, the high-quality version was downloaded three times as often as the standard version. The total size downloaded for the two versions was 4437 MB. How many downloads of the standard version were there?

47. Multiply.

$$(w + 1)(w - 6)$$

Simplify your answer.

48. Evaluate the expression when $a = 5$ and $y = -3$

$$-a + 6y$$

49. Solve for u

$$-4(-4u + 5) - 3u = 4(u - 4) - 7$$

Simplify your answer as much as possible.

50. Factor completely.

$$12y^6 + 44y^5 + 40y^4$$

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

$$3x - y = 3$$

52. Calculate.

$$\frac{6 \times 10^7}{5 \times 10^5}$$

Write your answer in scientific notation.

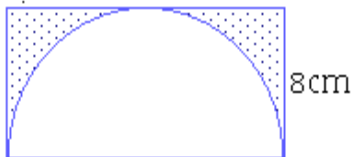
53. Simplify the following expression.

$$-5x^2 + 4 + 13x^2 - 15 - 3x$$

54. Ms. Tanaka has a class of 16 students. She can spend \$24 on each student to buy math supplies for the year. She first buys all of her students calculators, which costs a total of \$130.24. After buying the calculators, how much does she have left to spend on each student?

55. A rectangle is placed around a semicircle as shown below. The width of the rectangle is 8 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.



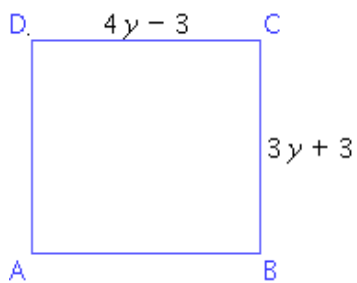
56. Simplify.

$$4xy^{-2} \cdot 7y^{-8}w^3 \cdot 3w^{-3}x^{-6}$$

Use only positive exponents in your answer.

57. The perimeter of the rectangle below is 154 units. Find the length of side \overline{CD}

Write your answer without variables.



58. Factor by grouping.

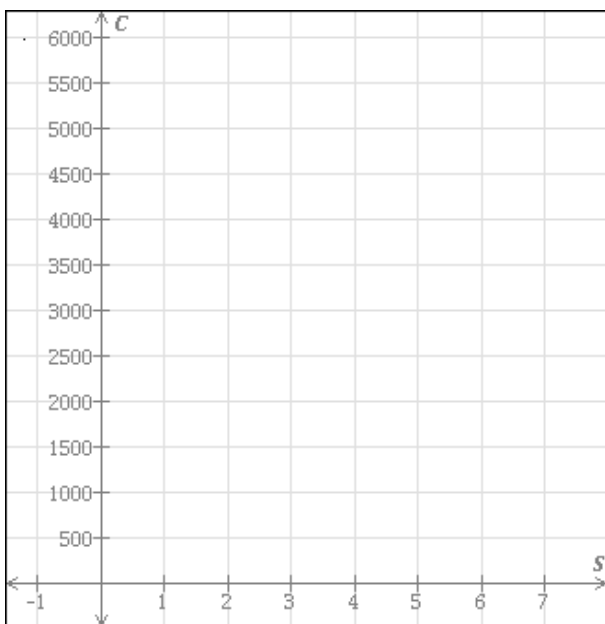
$$4u^2 - 9w - uw + 36u$$

59. Rewrite the following without an exponent.

$$\left(\frac{2}{7}\right)^{-2}$$

60. The Sugar Sweet Company is going to transport its sugar to market. It will cost \$4500 to rent trucks, and it will cost an additional \$150 for each ton of sugar transported.

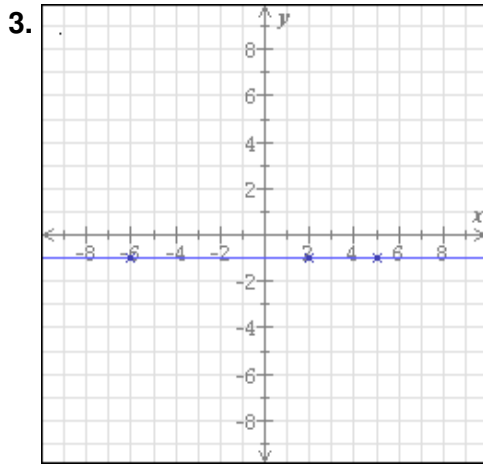
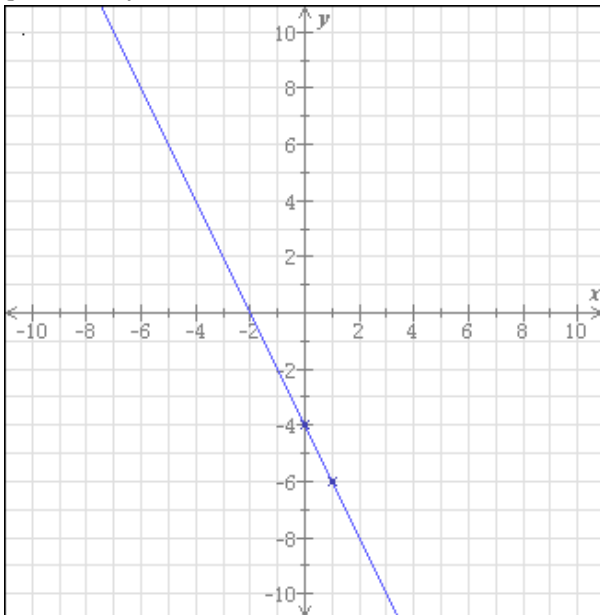
Let C represent the total cost (in dollars), and let S represent the amount of sugar (in tons) transported. Write an equation relating C to S and then graph your equation using the axes below.



Math 100 Mock Final #4 Answers for class Beginning Algebra / Math 100 – Master No Book

1. (a) By noon, the temperature in Fairbanks had risen by 17°F .
What was the temperature there at noon?
 -15°F
- (b) How much higher was the 6 a.m. temperature in Orlando than in Boston?
 71°F higher

2. slope: -2
 y -intercept: -4



4. (a) What was the greatest donation amount in a month?

\$4400

- (b) When did the greatest increase in donations occur?

March to April

5. 12

6. $4w^6x^2(7y^7 - 3w^3x^7)$

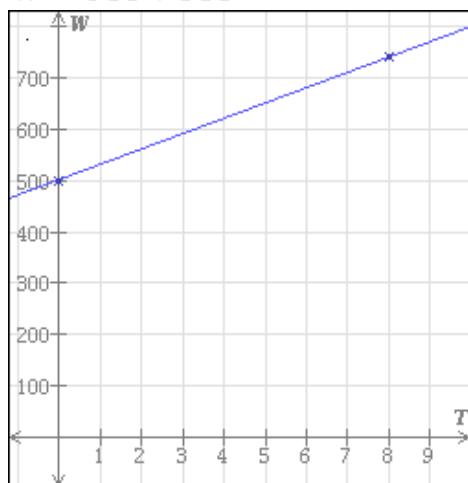
7. $-21b^5c^3 + 56b^6c^9 - 63bc^9$

8. $w = -3$

9. $13y - 28z$

10. $y = -24$

11. $W = 500 + 30T$



12. $4w^3y^4$

13. Equation of perpendicular line: $y = \frac{3}{5}x - 1$

Equation of parallel line: $y = -\frac{5}{3}x - \frac{37}{3}$

14. $(-7)^0 = 1$

$2\left(\frac{2}{5}\right)^0 = 2$

15. $u = 7$

16. $7z^4 - 9z^2$

17. y^{15}

18. $(z+3)(z-6)$

19. 19 centimeters

20. horizontal line: $y=3$

vertical line: $x=-9$

21. 73

22. $(2v-3)(v^2-7)$

23. -16

24. \$750

25. 6.7%

26. 2.6 hours

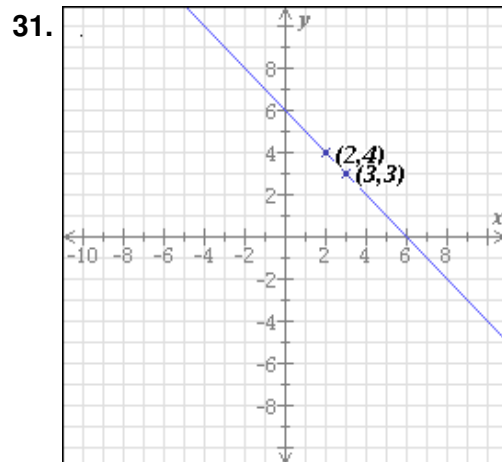
27. x-intercept: $-\frac{3}{2}$

y-intercept: $\frac{9}{7}$

28. 26 minutes

29. \$41.74

30. $\frac{p^4}{3}$



32. $-\frac{1}{2}$

33. $-\frac{3}{5}$

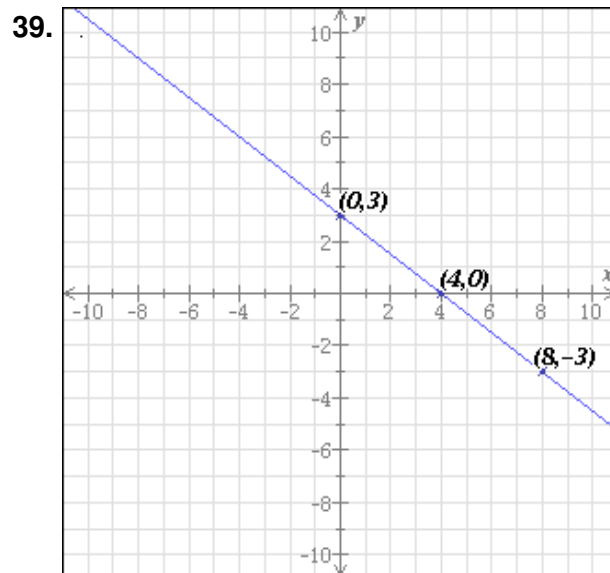
34. $24y - 8v + 12$

35. $y = \frac{4}{5}x - 1$

36. $20v^2 - 5v - 19$

37. 0

38. $w = -6$



40. \$475

41. $w^2 + 10w + 25$

42. $x^2 - 64$

43. $w = \frac{5}{6}$

44. 2

45. $x = \frac{y}{7} - 4$

46. 290 downloads

47. $w^2 - 5w - 6$

48. -23

49. $u = -\frac{1}{3}$

50. $4y^4(y+2)(3y+5)$

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

52. 1.2×10^2

53. $8x^2 - 3x - 11$

54. \$15.86

55. 27.52 cm^2

56. $\frac{84}{y^{10}x^5}$

57. $CD = 41$

58. $(4u - w)(u + 9)$

59. $\frac{49}{4}$

60. $C = 4500 + 150S$

