Entering Geometry (Post Algebra 1) Summer Homework



Name

_____

Please read all instructions before beginning this packet.

This packet is designed to serve as a checkpoint for the material covered in your Delta Math online assignment. You must complete the Delta Math assignment first before starting this packet.

Show all work directly in this packet.
If you need additional space, use lined paper and clearly label each problem.
Submit the completed printed packet when you return to school in August.

To maintain your academic progress, the math department at CSN expects you to spend approximately one hour per week working on these problem sets. Most problems can be completed without a calculator, but use when necessary.

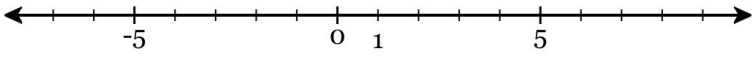
Your grade will be based on:

- Completion
- Accuracy
- A beginning-of-year assessment given during the first week of school

Please give your best effort. This work helps reflect your individual strengths and areas for growth, and it also allows the department to analyze overall student performance. Teachers will use this information to adjust instruction and better support your learning.

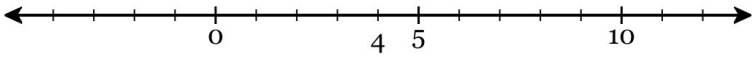
Please reach out to your teacher or the department chair with any questions or concerns.

1. Select the values that make the inequality $y > 1$ true. (Numbers written in order from least to greatest going across.)



☐ -7	☐ -4	☐ -2
☐ 0	☐ 0.9	☐ 0.99
☐ 0.999	☐ 1	☐ 1.001
☐ 1.01	☐ 1.1	☐ 2
☐ 4	☐ 6	☐ 9

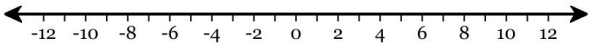
2. Select the values that make the inequality $u \geq 4$ true. (Numbers written in order from least to greatest going across.)



☐ -4	☐ -1	☐ 1
☐ 3	☐ 3.9	☐ 3.99
☐ 3.999	☐ 4	☐ 4.001
☐ 4.01	☐ 4.1	☐ 5
☐ 7	☐ 9	☐ 12

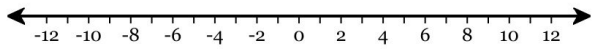
3. Solve the inequality and graph the solution on the line provided.

$$15 + 5x \geq 0$$



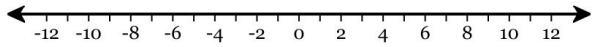
4. Solve the inequality and graph the solution on the line provided.

$$6 + 8x < 14$$



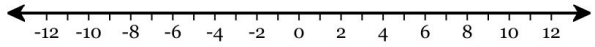
5. Solve the inequality and graph the solution on the line provided.

$$-74 + 8x \geq -98$$



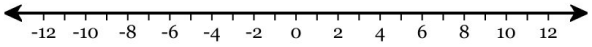
6. Solve the inequality and graph the solution on the line provided.

$$2x - 56 \leq -54$$



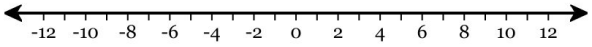
7. Solve for x and graph the solution on the number line below.

$$-11 < -2x + 9 \leq 21$$

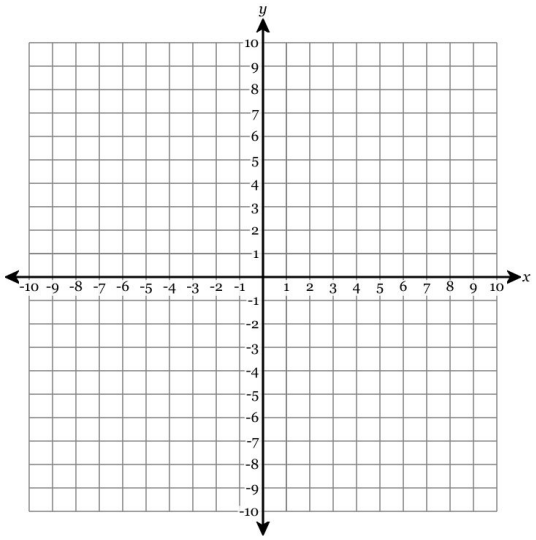


8. Solve for x and graph the solution on the number line below.

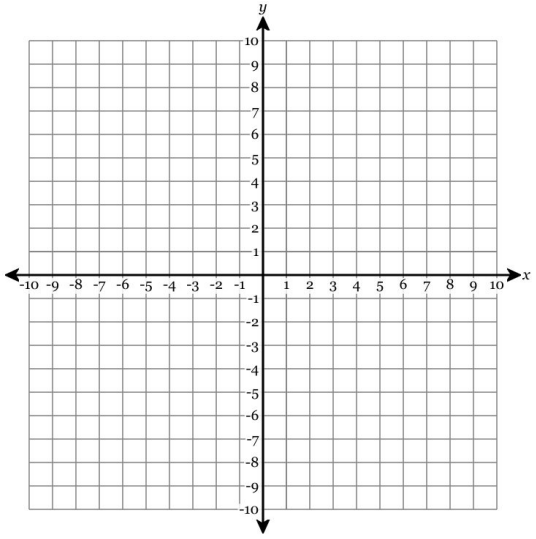
$$3x - 2 < 13 \quad \text{or} \quad 3x - 2 > 19$$



9. Plot the point $(-5, 3)$.

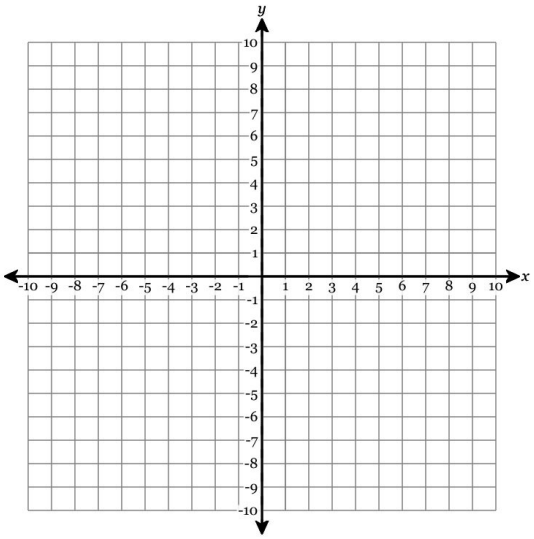


10. Plot the point $(4, 5)$.



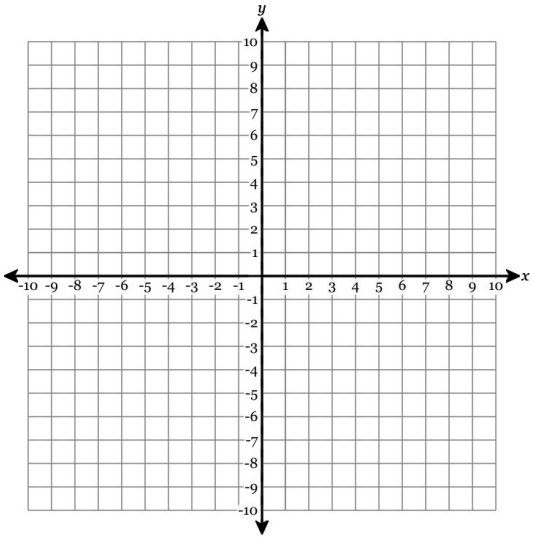
11. Graph the following features:

- Slope = $\frac{4}{3}$
- Y-intercept = 2



12. Graph the following features:

- Y-intercept = 4
- Slope = -3



13. Find the slope of the line represented by the equation below.

$$y = -x + 3$$

14. Find the y-intercept of the line represented by the equation below.

$$y = -\frac{5}{3}x + 4$$

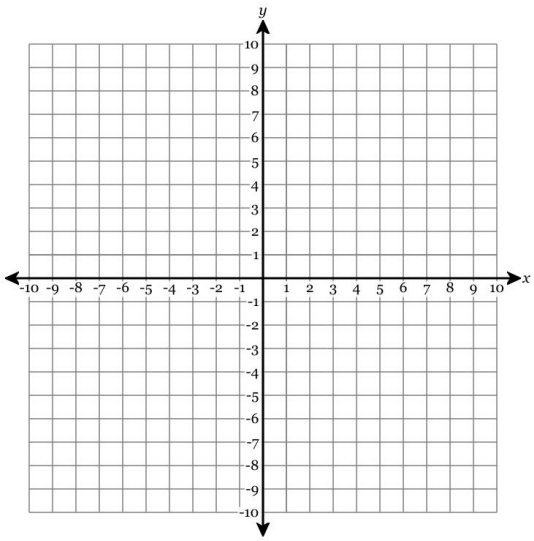
15. Find the slope of the line represented by the equation below.

$$-3y - 3x = 6$$

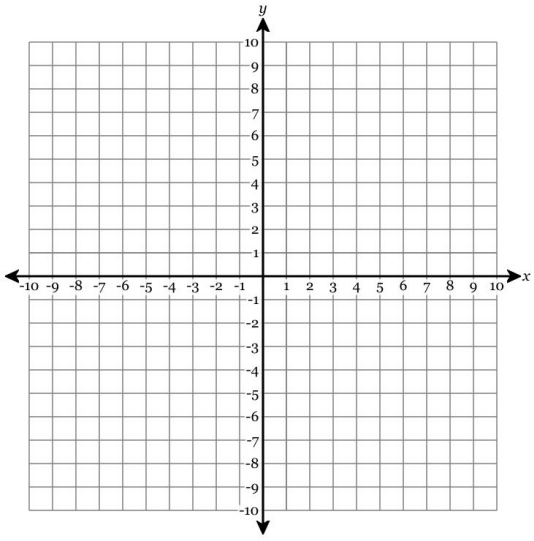
16. Find the y-intercept of the line represented by the equation below.

$$10 = -x - 5y$$

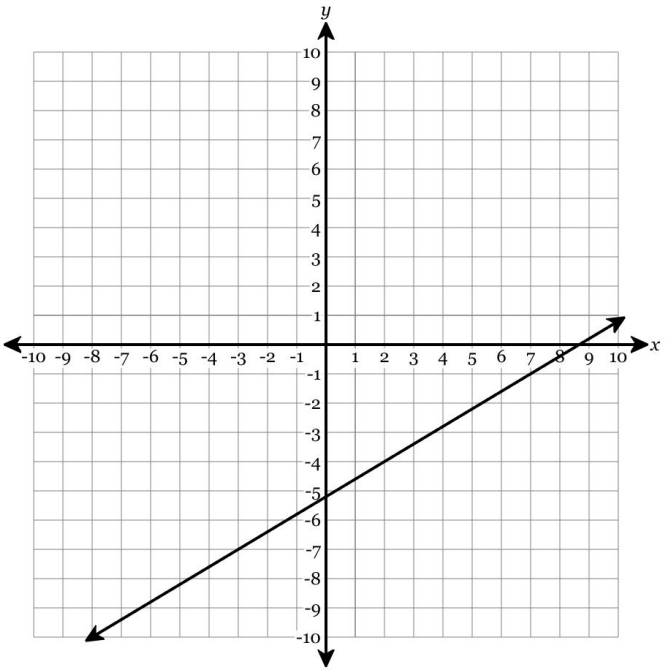
17. Graph the line with the equation $y = -\frac{1}{3}x - 4$.



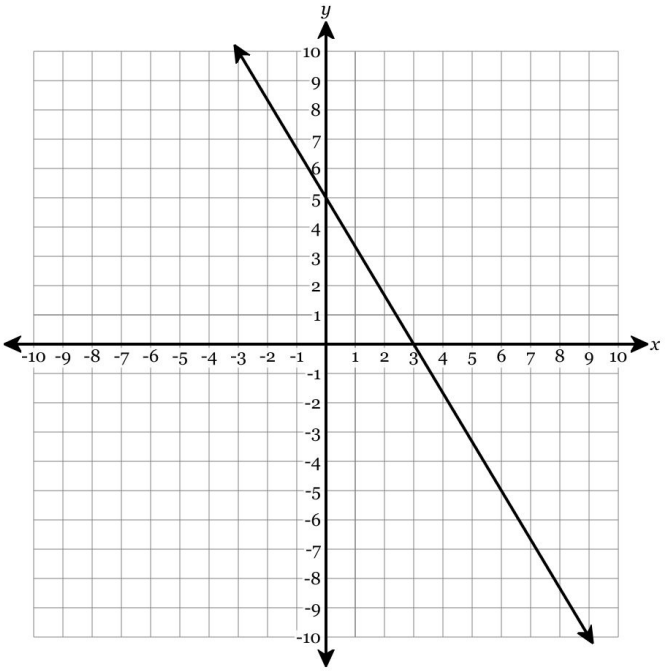
18. Graph the line with the equation $y = -\frac{1}{3}x - 2$.



19. Draw a line representing the "rise" and a line representing the "run" of the line. State the slope of the line in simplest form.



20. Draw a line representing the "rise" and a line representing the "run" of the line. State the slope of the line in simplest form.



21. What is the slope of the line that passes through the points $(-7, -4)$ and $(-4, -5)$? Write your answer in *simplest form*.

22. What is the slope of the line that passes through the points $(-3, 10)$ and $(-18, 15)$? Write your answer in *simplest form*.

23. Put the following equation of a line into slope-intercept form, simplifying all fractions.

$$4x + 10y = -70$$

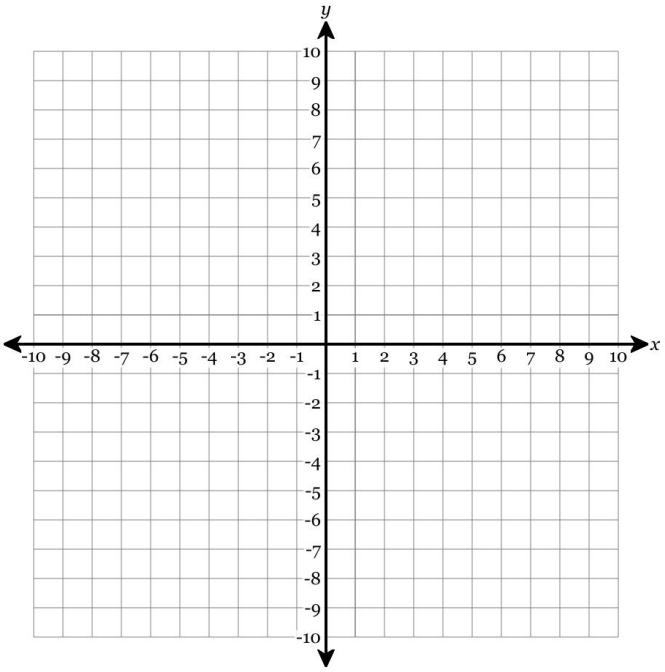
24. Put the following equation of a line into slope-intercept form, simplifying all fractions.

$$4x + 4y = -20$$

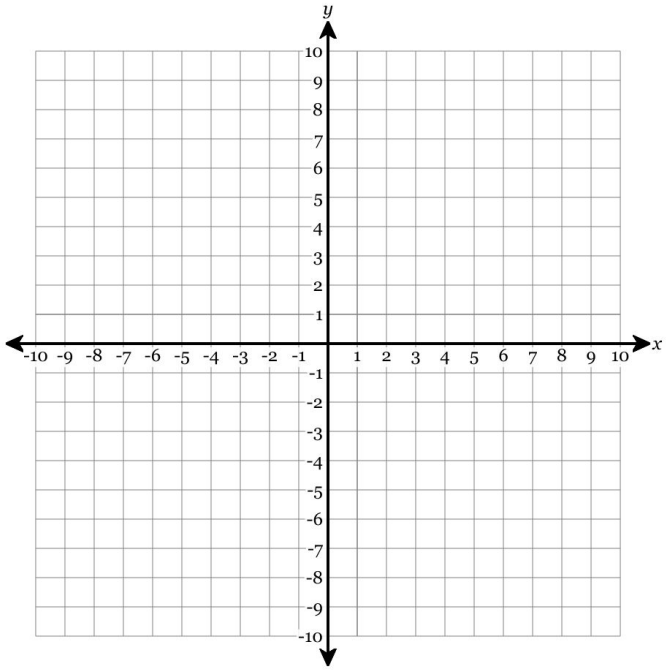
25. Find the x- and y-intercepts of the graph of $x + y = 12$.

26. Find the x- and y-intercepts of the graph of $x + 4y = 15$.

27. Plot the x- and y-intercepts and use them to graph $x - 10y = 9$.

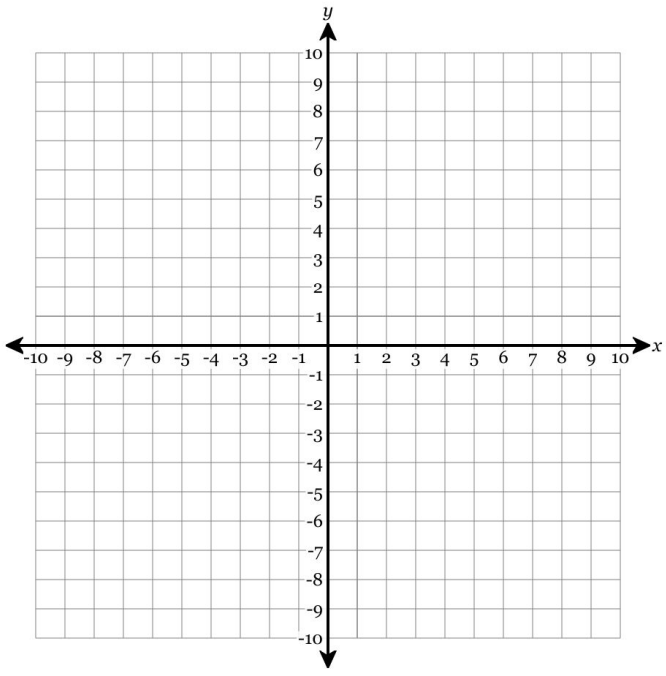


28. Plot the x- and y-intercepts and use them to graph $9x + 9y = 27$.



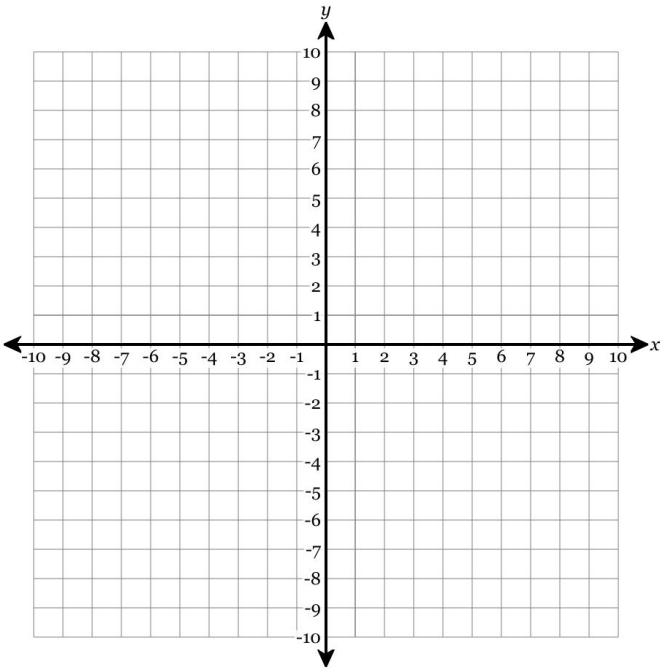
29. Graph the inequality on the axes below.

$$-x + 5y \leq -20$$



30. Graph the inequality on the axes below.

$$y > -3x - 6$$



31. What is the equation of the line that passes through the point $(-6, -2)$ and has a slope of $\frac{1}{6}$?

32. What is the equation of the line that passes through the point $(3, -5)$ and has a slope of 0?

33. What is an equation of the line that passes through the points $(0, 2)$ and $(8, -2)$?

34. What is an equation of the line that passes through the points $(-8, 6)$ and $(6, 6)$?

35. Lily is driving on a long road trip. She wrote an equation to represent how many gallons of gas she has left in her tank, $g = 16 - 0.25h$, where g represents the number of gallons and h represents time in hours. What could the number 16 represent in the equation?

A. The number of gallons of gas at time $h = 0$.

B. The number of gallons in the tank when the trip ends.

C. How quickly the car uses gas, in gallons per hour.

D. How long it takes Lily to run out of gas.

36. Alejandro is preheating his oven before using it to bake. Alejandro wants to predict the final temperature after x minutes. He wrote the equation $y = 67 + 20x$, where y represents the final temperature in degrees Fahrenheit. What could the number 20 in Alejandro's equation represent?

A. The change in minutes for every change of one degree Fahrenheit.

B. The time when the oven's temperature is $0°$.

C. The oven's temperature after 1 minute.

D. The rate of change in the oven's temperature over time.

37. Find the solution of the system of equations.

$$-6x + 6y = -24$$
$$-6x + 9y = -45$$

38. Find the solution of the system of equations.

$$-3x + 10y = 17$$
$$3x + 7y = 17$$

39. Find the solution of the system of equations.

$$4x + 3y = -14$$
$$8x + 10y = -36$$

40. Find the solution of the system of equations.

$$-3x - 2y = -4$$
$$9x + 3y = 15$$

41. Solve the system by substitution.

$$y = 10x$$
$$y = 2x - 16$$

42. Solve the system by substitution.

$$y = 5x$$
$$y = 9x + 8$$

43. Solve the system by substitution.

$$-5x + 2y = -42$$
$$6x = y$$

44. Solve the system by substitution.

$$-4x - y = 17$$
$$4y = x$$

45. Solve the following equation for y.

$$h + y = n$$

46. Solve the following equation for t.

$$t + A = g$$

47. Solve the following equation for B.

$$\frac{6}{5}B + g^2 = d$$

48. Solve the following equation for a.

$$6a + ha = B$$

49. Combine like terms.

$$3y - 4 - 6 - 3x - 7y + 6x + 1$$

50. Combine like terms.

$$6y^3 - 7x^2 + 4 + 4x^2 - 1 - 5y^3 + x^2$$

51. Simplify: $a^3 \cdot a^6$

52. Simplify: $\left(m^2\right)^3$

53. Distribute $-10\left(-2x^2 + x\right)$.

54. Distribute $-9\left(x + 8\right)$.

55. Multiply. $8(8x^2 + 10x)$

56. Multiply. $x(4x^2 - 7x - 10)$

57. Fully simplify. $-11x^4y^3(-7x^5y^5)$

58. Fully simplify. $-14x^2y^3(5x^2y^3)$

59. Fully simplify. $(-3x^2y^4)^5$

60. Fully simplify. $(6xy^5)^3$

61. Fully simplify using only positive exponents.

$$\frac{20x^3y^5}{4x^2y^5}$$

62. Fully simplify using only positive exponents.

$$\frac{5x^5y^2}{x^4y^7}$$

63. Answer the questions about the following polynomial.

$$-x^2 + 5x^3 - 7$$

The expression represents a _____ polynomial
word bank
with _____ terms. The constant term is _____, the leading term is _____, and the leading coefficient is _____.

This word bank also applies to question 64.

Word bank: **(a)** quintic, **(b)** cubic, **(c)** linear, **(d)** quartic, **(e)** quadratic

64. Answer the questions about the following polynomial.

$$x + 4 + \frac{x^4}{6}$$

The expression represents a _____ polynomial
word bank
with _____ terms. The constant term is _____, the leading term is _____, and the leading coefficient is _____.

65. Subtract $5x^2 + 2x$ from $9x^2 + 5x + 8$.

66. Find the sum of $-9x^2 + 2$ and $-6x^2 - 10x + 10$.

67. Express as a trinomial: $(2x - 9)(2x + 3)$

68. Express as a trinomial: $(3x - 2)(2x + 5)$

69. Express $(x + 2)^2$ as a trinomial in standard form.

70. Express $(x - 8)^2$ as a trinomial in standard form.

71. Factor $x^2 - 2x - 8$

72. Factor $x^2 - 2x - 3$

73. Factor the trinomial: $5x^2 + 34x + 24$

74. Factor the trinomial: $5x^2 + 31x + 6$

75. Factor completely: $5x^2 - 14x + 9$

76. Factor completely: $5x^2 + 9x + 4$

77. Solve for all values of x by factoring.

$$x^2 - 64 = 0$$

78. Solve for all values of x by factoring.

$$x^2 + 2x + 1 = 1$$

79. Solve the quadratic by factoring.

$$x^2 + 49 = 14x + 9$$

80. Solve the quadratic by factoring.

$$x^2 + 4x = 7x + 54$$

81. Solve the quadratic by factoring.

$$5x^2 + 14x - 13 = -10$$

82. Solve the quadratic by factoring.

$$2x^2 - 19x + 5 = -10x - 2$$

83. Express in simplest radical form: $\sqrt{108}$

84. Express in simplest radical form: $\sqrt{18}$

85. Express in simplest radical form.

$$6\sqrt{10} - \sqrt{10}$$

86. Express in simplest radical form.

$$-8\sqrt{10} + 8\sqrt{90}$$

87. Express in simplest form with a rational denominator.

$$\frac{3}{\sqrt{5}}$$

88. Express in simplest form with a rational denominator.

$$\frac{6}{\sqrt{8}}$$

89. Solve the equation for all values of x by *completing the square*. Express your answer in simplest form.

$$x^2 + 6x = 7$$

90. Solve the equation for all values of x by *completing the square*. Express your answer in simplest form.

$$x^2 - 2x = 3$$

91. What is the discriminant of the quadratic equation $3x^2 + 5x - 3 = 0$?

A. 11 B. -11 C. 61 D. -61

92. What is the discriminant of the quadratic equation $-x^2 - 7x + 5 = 0$?

A. 69 B. -69 C. -29 D. 29

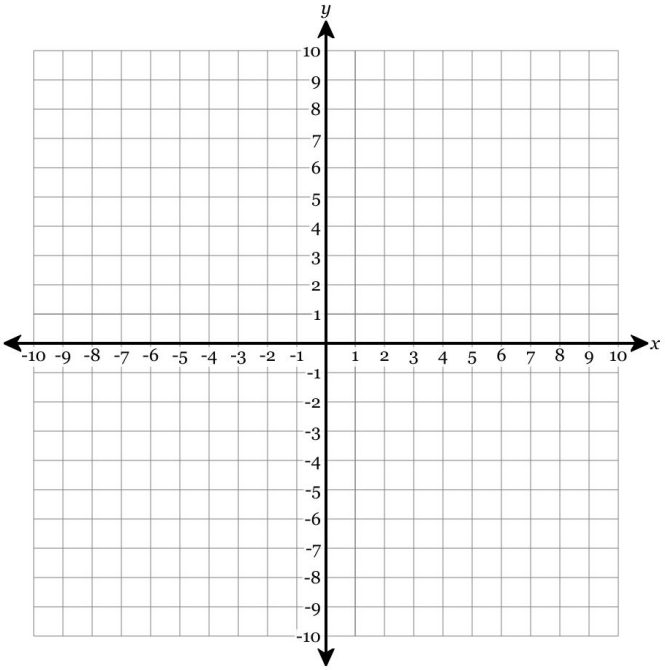
93. Use the quadratic formula to solve. Express your answer in simplest form.

$$20p^2 - 7p - 1 = 5$$

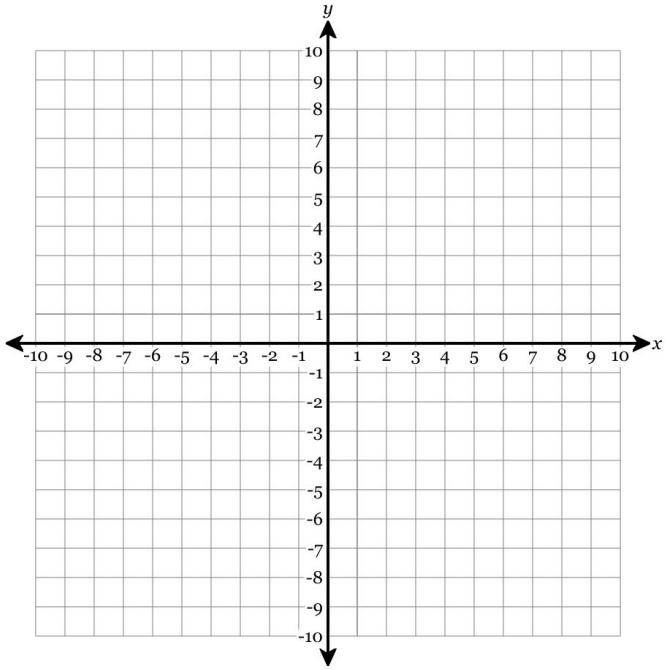
94. Use the quadratic formula to solve. Express your answer in simplest form.

$$6z^2 + 19z + 15 = 0$$

95. Graph the equation $y = -x^2 - 8x - 12$ on the set of axes below. You must plot 5 points including the roots and the vertex.



96. Graph the equation $y = x^2 + 8x + 12$ on the set of axes below. You must plot 5 points including the roots and the vertex.



97. Find the *y-coordinate* of the y-intercept of the polynomial function defined below.

$$f(x) = 6x^5 + 5x^2 + 9x + 3x^4 + 4x^3$$

98. Find the *y-coordinate* of the y-intercept of the polynomial function defined below.

$$f(x) = 2(x-1)^2(2x+6)$$

99. Determine the value of y, if x is 11.

$$y = |x| - 4$$

100. Determine the value of y, if x is -2.

$$y = |x| - 6$$

101. Determine the value of y, if x is 4.

$$y = x^2 + 8$$

102. Determine the value of y, if x is 5.

$$y = x^2 - 3$$