

ALGEBRA 1 3302 FINAL EXAM REVIEW

Name _____

Date _____

ABSOLUTE VALUE REVIEW

Solve the following equations:

1. $-|x| = -8$

2. $|3x - 4| = 8$

3. $3|2x + 4| = 12$

4. $|x + 6| - 8 = -8$

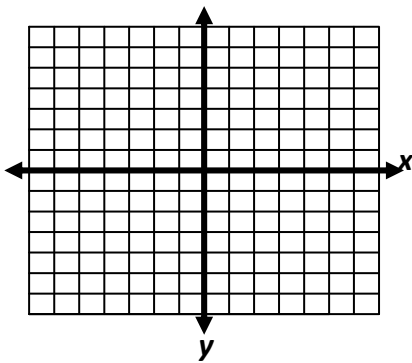
5. $2|2 - 6x| = -16$

6. $-3|2x - 6| - 2 = -8$

Graph the functions. Show at least five points on the graph.

List the vertex point, minimum or maximum value, domain & range, and x & y intercepts.

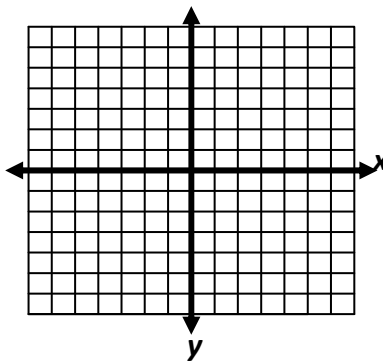
7. $f(x) = -|x| + 2$



Vertex $_{(\quad, \quad)}$

Min or Max _____

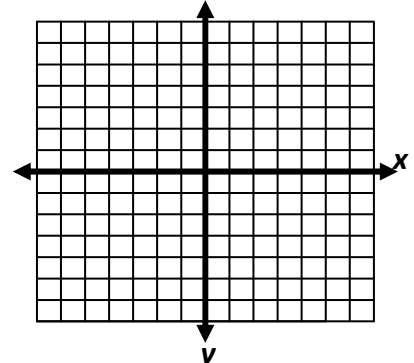
8. $f(x) = |x + 4| - 3$



Vertex $_{(\quad, \quad)}$

Min or Max _____

9. $f(x) = 2|x + 3|$

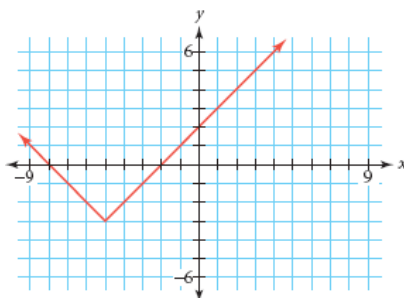


Vertex $_{(\quad, \quad)}$

Min or Max _____

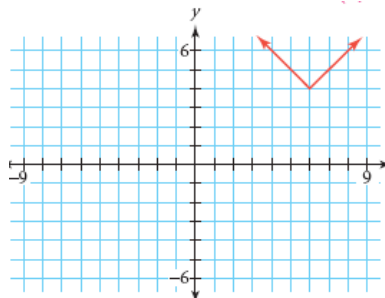
Identify the vertex and write the absolute value equation of the graph shown.

10.



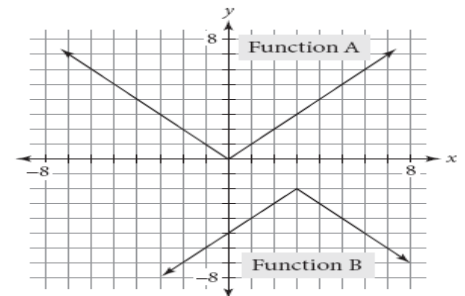
$y =$ _____

11.



$y =$ _____

12.



Function B: $f(x) =$ _____

FUNCTION NOTATION REVIEW:

Given the following functions: $f(x) = 2|x + 3|$ and $g(x) = 3x - 7$

Evaluate for the given values.

13. $f(6)$

14. $f(-2)$

15. x , when $f(x) = 10$

16. $g(2)$

17. $g(-3)$

18. x , when $g(x) = 8$

Use this graph of $y = f(x)$ to answer 19-25.

19. Find $f(0)$

20. Find $f(3)$

21. Explain the real world meaning of $f(6) = 8$.

22. For what x -values does $f(x) = 8$

23. Use function notation to represent the distance at 6 meters.

24. What are the independent and dependent variables?

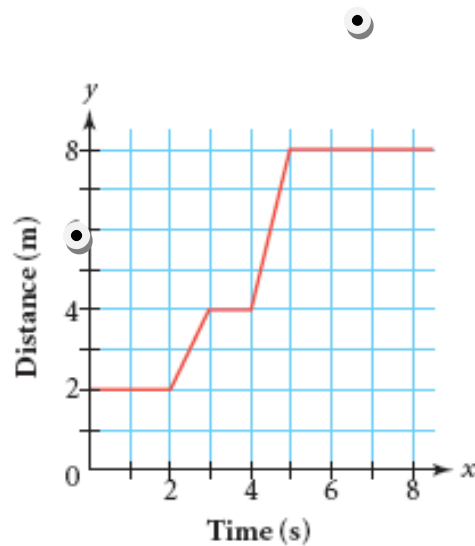
I =

D =

25. $D: \{ \underline{\hspace{10em}} \}$

What domain & range are shown in the graph?

$R: \{ \underline{\hspace{10em}} \}$



POLYNOMIAL REVIEW:

Simplify.

26. $(4n - 3n^3 + 8) + (3n^3 + 4n + 6)$

27. $(3r^3 + 6s) - (5r - 7s)$

28. $(a^3 - 5a^2 + b - 2) - (3a^3 + 5a - b + 2)$

Find the product.

29. $(2x)(x + 4)$

30. $(2x - y)(2x + y)$

31. $(p + 4)(p^2 + 4p - 5)$

32. $(3x + 1)(3x - 1)$

33. $(5m - 6)^2$

34. $-3(2x - 3)(x + 5)$

Completely FACTOR the Expression.

35. $x^2 + 7x + 6$

36. $x^2 - 13x + 36$

37. $x^2 - 5x - 24$

Remember to Remove a GCF first!

38. $x^3 + 3x^2 + 2x$

39. $x^4 - 2x^3 - 35x^2$

40. $2x^3 - 16x^2 + 24x$

Some look tricky, but remember your perfect squares!

41. $x^2 - 49$

42. $4x^2 - 25$

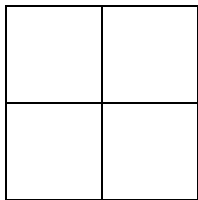
43. $100 - 81x^2$

44. $x^2 - 16x + 64$

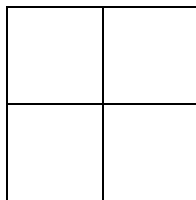
45. $a^2 + 10ab + 25b^2$

46. $4x^2 - 20xy + 25y$

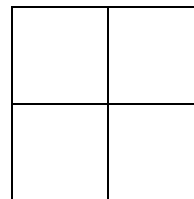
47. $8x^2 + 2x - 3$



48. $10x^2 + 17x + 6$



49. $4x^2 - 3x - 7$



Solve. (Solve means to find the value of x . Factor and then set the factors equal to zero)

50. $x(2x - 1)(3x + 5) = 0$

51. $x^2 - 10x + 24 = 0$

52. $25x^2 - 1 = 0$

53. $y^2 - 81 = 0$

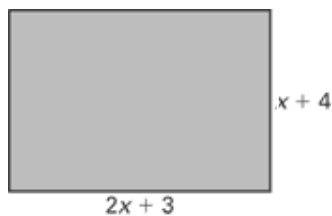
54. $3x^2 - 15 = -12x$

55. $18x^2 + 4x = 21$

56. The profits of a company are found by subtracting the company's costs from its revenue. If a company's cost can be modeled by $18x + 85,000$ and its revenue can be modeled by $3x^2 + 32x + 210,000$, what is an expression for the profit?

57. Write $x^2(x + 2) - 3x(x + 2) + 2(x + 7)$ as a simplified polynomial. Show your work.

58. Below is a diagram of a garden that is being built.



Determine the area of the garden in terms of x .
Write your answer as a trinomial.

If the gardener decides to increase the length and width by a scale factor of 4, what will be the new area?

59. A rectangle has an area given by $A = x^2 + 7x + 12$. Find possible expressions for the length and width of the rectangle.

QUADRATIC REVIEW:

Solve for the *exact* solution.

60. $x^2 - 9 = 16$

61. $4x^2 - 9 = 27$

62. $(x + 3)^2 - 8 = 17$

63. $2(x - 11)^2 = 98$

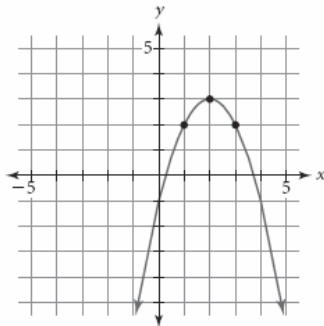
64. $x^2 + 25 = 9$

65. $(x - 2)^2 + 4 = 11$

Write the equation of each parabola graphed.

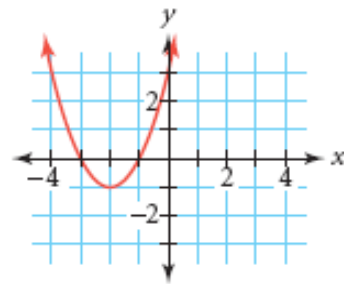
66. Vertex Form: _____

General Form: _____



67. Factored Form: _____

General Form: _____



Rewrite the equations in Factored Form. Identify the x -intercepts of the graph of the function.

68. $y = x^2 - 6x + 8$

69. $y = x^2 - 12x + 36$

70. $y = x^2 - 16$

Rewrite the equations in Standard Form.

71. $y = (x - 2)(x + 4)$

72. $y = 2(x - 1)^2 - 6$

73. $y = (x - 6)(x + 6)$

Identify the vertex of the following quadratics.

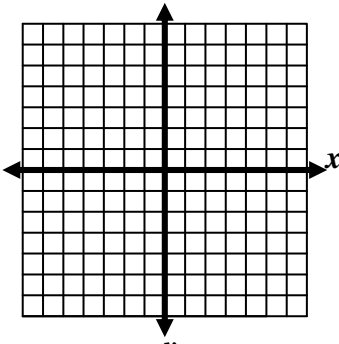
74. $y = (x - 1)(x + 5)$

75. $y = (x - 2)(x - 8)$

76. $y = x^2 - 12x + 27$

Graph the quadratic functions. Label the vertex and line of symmetry. Plot at least four other points on the graph.

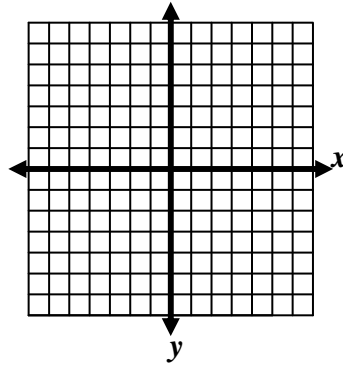
77. $f(x) = -x^2 + 5$



Vertex _____

Line of symmetry _____

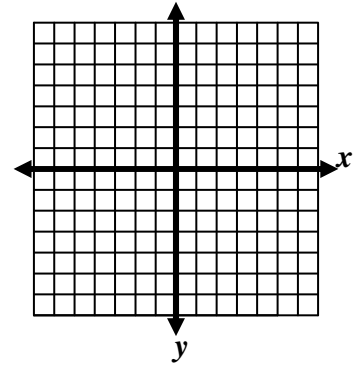
78. $f(x) = (x - 2)^2 - 3$



Vertex _____

Line of symmetry _____

79. $f(x) = 2(x + 1)^2 + 2$



Vertex _____

LOS: _____

Apply Quadratic Models.

80. The height of a ball dropped from the top of a building is modeled by $h(t) = -16t^2 + 576$, where t is in seconds and h is in feet.

A. What is $h(3)$?

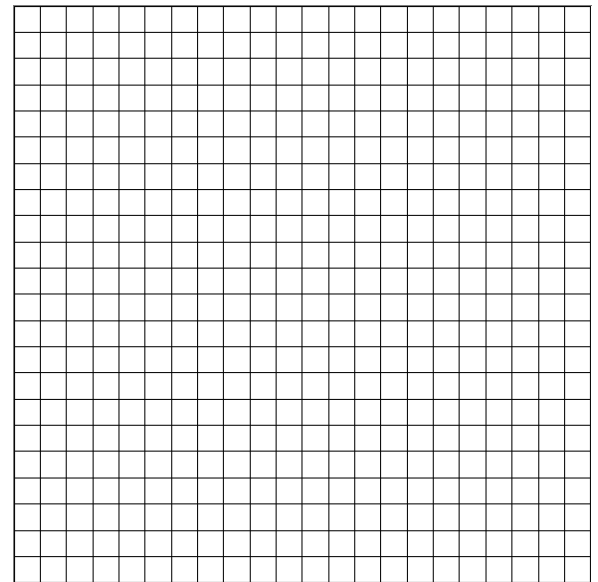
B. What is the real world meaning of the answer to 80A?

C. At what time, does $h(t) = 176$

D. At what *time* is the ball on the ground?

E. What domain and range values make sense in this situation?

F. Graph the function for the domain and range described in 80E. Be sure to label the axis.



RADICALS REVIEW

List the first 20 perfect squares:

Simplify each radical expression:

81. $\sqrt{20}$

82. $\sqrt{96}$

83.) $7\sqrt{75}$

84. $\sqrt{400x^2}$

85. $\sqrt{108x^3z}$

86.) $10\sqrt{52x^2y^3z}$

Simplify the radical expression

87. $\sqrt{5} + \sqrt{5} + \sqrt{2}$

88. $(9\sqrt{5})(4\sqrt{2})$

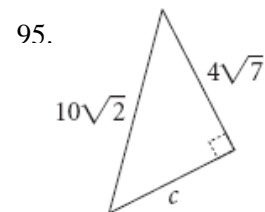
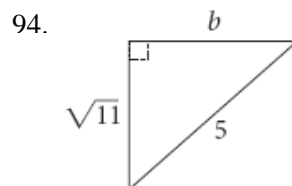
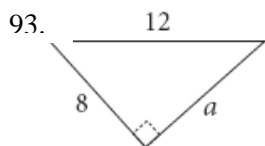
89. $5\sqrt{2} + 4\sqrt{3} - \sqrt{2} + 10\sqrt{3}$

90. $(9\sqrt{5})^2$

91. $\frac{\sqrt{98}}{\sqrt{7}}$

92. $\frac{6\sqrt{15}}{\sqrt{3}}$

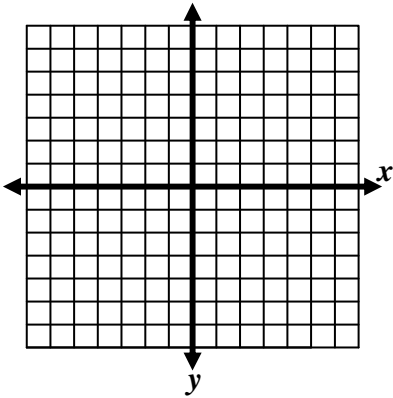
Find the exact length of the third side of each right triangle. All measurements are in centimeters.



SYSTEMS OF EQUATIONS REVIEW

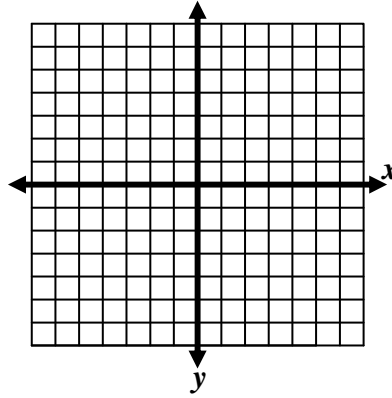
Find the solution to the system of equations by graphing.

96. $y = -\frac{3}{2}x - 4$
 $y = \frac{1}{2}x + 4$



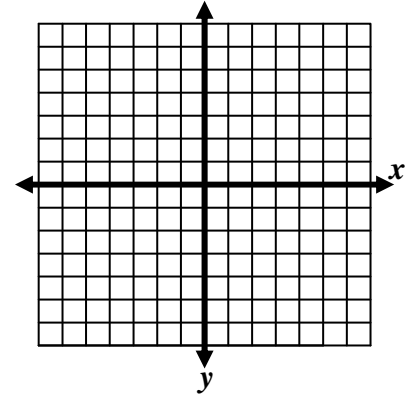
Solution (,)

97. $y = x + 2$
 $y = -2$



Solution (,)

98. $-3x + 3y = 4$
 $-x + y = 3$



Solution (,)

Solve the system of equations using substitution.

99. $4x + 3y = 31$
 $y = 2x + 7$

100. $-2x + 2y = 8$
 $-x + y = 4$

101. $-2x + y = -3$
 $5x - 2y = 4$

Solve each system of equations using elimination.

102. $3x + 3y = -6$
 $x + 2y = 6$

103. $3x - 9y = 2$
 $2x + 3y = -12$

104. $5x - 4y = -30$
 $2x + 3y = -12$

105. Your math teacher tells you that next week's test is worth 100 points and contains 38 problems. Each problem is worth either 5 points or 2 points. How many problems are worth 5 points? 2 points?

106. Consider the table below. A salesman rents a car for two trips from the same rental company. The rental company charges a daily fee plus a charge for each mile driven. The table below shows the cost of each trip. How much did the company charge per day and per mile?

Car Rental

Trip	Time	Distance Traveled	Cost
First Trip	2 days	275 miles	\$140.75
Second Trip	1 day	95 miles	\$59.75

107. Rayson scored 1480 combined in Math & Verbal on his SATs. His math score was 560 less than twice his verbal score. What did he score in math and verbal?

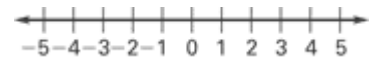
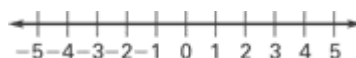
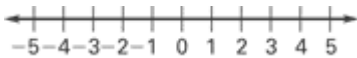
INEQUALITIES REVIEW

Solve & Graph the following Inequalities:

108. $-x - 3 \geq -10x - 12$

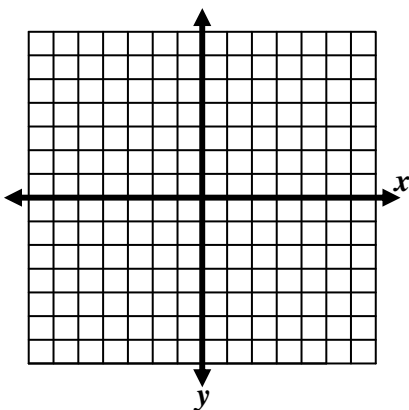
109. $-5(x - 2) - 2x < 3$

110. $-4 < 3(x + 2) - 1$

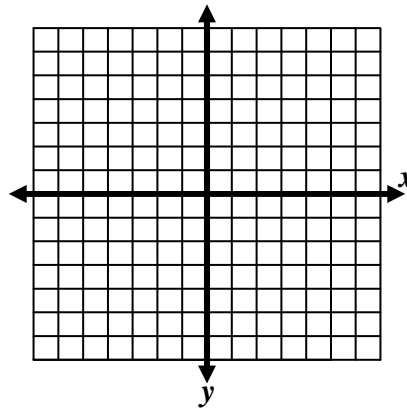


Graph the Inequalities or System of Inequalities:

111. $3x - 2y \leq 6$



112. $\begin{cases} y < 2 \\ y \geq 3x - 2 \end{cases}$



113. $\begin{cases} 3x + 2y > 12 \\ 2x - y \leq 6 \end{cases}$

