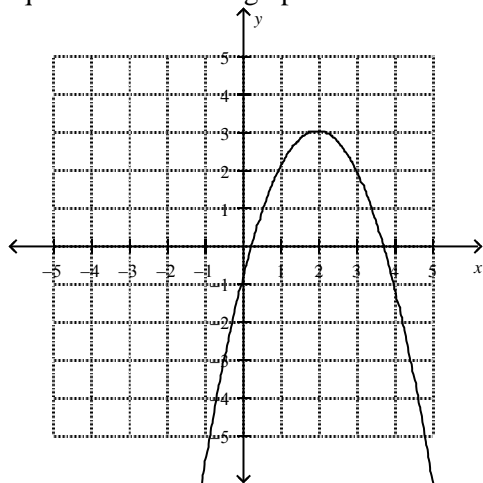


Final Exam Review – due on day of your final exam.

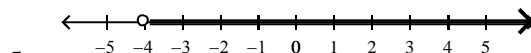
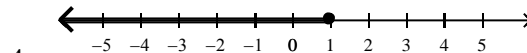
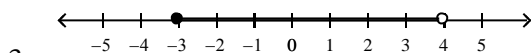
Final exam MUST be completed in order to be eligible for a retest.

All Problems must be worked out on separate paper and all work must be shown for credit.

- Justin has \$75 to spend on DVDs. Target is selling DVDs for \$8 each, including tax. If x represents the number of video games Justin purchases, the function that represents the situation is : $C(x) = 8x$. What is the domain for this situation?
- The graph of a quadratic function f is shown below. If the graph of f is translated 5 to the left and down 3, write the equation of the new graph.



Given the number line, write the set of numbers in interval notation.



Describe the transformations from the graph of $f(x) = x^2$.

6. $g(x) = 2(x+1)^2$

7. $h(x) = (x-1)^2 + 5$

Find the inverse of the function.

8. $f(x) = 2x + 3$

9. $g(x) = \frac{1}{4}x - 5$

10. For $f(x) = 2x + 3$, find $f(-1)$.

- Find the slope of the line through the points (7, 2) and (0, 5)
- A rental car agency charges a flat fee of \$34.00 plus \$1.50 per day to rent a certain car. Another agency charges a fee of \$26.00 plus \$2.50 per day to rent the same car.
 - Write a system of equations to represent the cost c for renting a car at each agency for d days.
 - Using a graphing calculator, find the number of days for which the costs are the same. Round your answer to the nearest whole day.

Without graphing, classify each system as *independent*, *dependent*, or *inconsistent*.

13.
$$\begin{cases} y = -3x - 5 \\ 9x + 3y = -15 \end{cases}$$

14.
$$\begin{cases} -6x + 3y = 15 \\ y = 2x + 6 \end{cases}$$

15. A group of 75 people attended a ball game. There were four times as many children as adults in the group. Set up a system of equations that represents the numbers of adults and children who attended the game and solve the system to find the number of children who were in the group.

#16 – 21. Use the any method to solve the system of equations (graphing, elimination, substitution, or matrices).

16.
$$\begin{cases} x - 5y = -15 \\ 2x - 5y = -15 \end{cases}$$

17.
$$\begin{cases} 5x + 6y = -16 \\ 7x - 5y = -9 \end{cases}$$

18.
$$\begin{cases} 2x + 2y = -1 \\ 6x + 6y = -4 \end{cases}$$

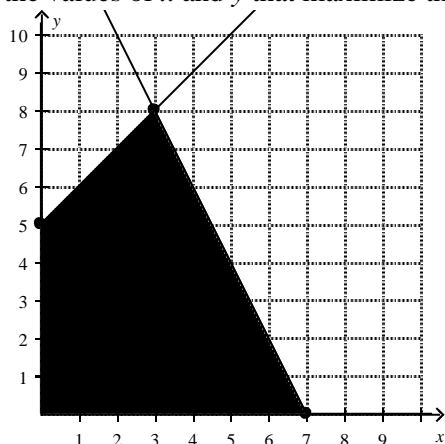
19.
$$\begin{cases} 2x + 2y - 2z = -6 \\ -2x + y + 3z = -5 \\ -2x + 2y - z = 0 \end{cases}$$

20.
$$\begin{cases} 2x - 2y + z = -15 \\ 6x - 3y - z = -19 \\ 3x - y - z = -6 \end{cases}$$

21.
$$\begin{cases} 2w - 3x - y = 8 \\ 2w - 3x - 3y - 2z = 18 \\ w - 3x + 2y - 2z = 17 \\ 3w + 3x - 3y - z = -20 \end{cases}$$

22. Your club is baking vanilla and chocolate cakes for a bake sale. They need at most 25 cakes. You cannot have more than 10 chocolate cakes. Write a system of inequalities to model this system.

23. Find the values of x and y that maximize the objective function $P = 4x - 3y$ for the graph. What is the maximum value?



24. State the dimensions of the matrix $A = \begin{bmatrix} -9 & 6 \\ -3 & 3 \\ -1 & 8 \end{bmatrix}$

Find the values of the variables.

25.
$$\begin{bmatrix} -6 & -p^2 \\ 3z & 3 \end{bmatrix} = \begin{bmatrix} 2x & -100 \\ -15 & 3 \end{bmatrix}$$

#26 – 27. Solve the matrix equation.

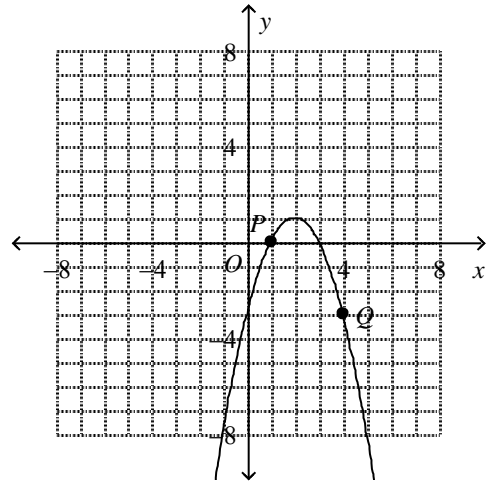
26.
$$\begin{bmatrix} -8 & -7 \\ 1 & 5 \end{bmatrix} + X = \begin{bmatrix} 2 & 4 \\ 8 & 5 \end{bmatrix}$$

27.
$$X - \begin{bmatrix} 2 & -5 & 8 \\ -9 & 3 & 0 \end{bmatrix} = \begin{bmatrix} 6 & -1 & 3 \\ -5 & 2 & 2 \end{bmatrix}$$

Find the product.

28.
$$-8 \begin{bmatrix} 7 & -4 & 0 \\ -3 & 0 & 5 \\ 6 & 2 & 1 \end{bmatrix}$$

29. Identify the vertex and the axis of symmetry of the parabola.
Identify points corresponding to P and Q.



Find a quadratic model for the set of values. Then find the value of the y for $x = 3$.

30. $(-2, 20), (0, -4), (4, 44)$

31.

x	-2	0	4
$f(x)$	-4	4	-52

32. A manufacturer determines that the number of drills it can sell is given by the formula $D = -3p^2 + 156p - 310$, where p is the price of the drills in dollars.
- At what price will the manufacturer sell the maximum number of drills?
 - What is the maximum number of drills that can be sold?
33. Dalco Manufacturing estimates that its weekly profit, P , in hundreds of dollars, can be approximated by the formula $P = -4x^2 + 8x + 5$, where x is the number of units produced per week, in thousands.
- How many units should the company produce per week to earn the maximum profit?
 - Find the maximum weekly profit.
34. The function $y = -16t^2 + 286$ models the height y in feet of a stone t seconds after it is dropped from the edge of a vertical cliff. How long will it take the stone to hit the ground? Round to the nearest hundredth of a second.
35. Simplify $\sqrt{-150}$ using the imaginary number i .

Write the number in the form $a + bi$.

36. $\sqrt{-4} + 7$

37. $6 - \sqrt{-150}$

38. Find $|2 + 5i|$.

39. Find the additive inverse of $7 - 4i$.

Simplify the expression.

40. $(-1 - 6i) + (-3 - 3i)$

41. $(-2 + 2i) - (-6 - 5i)$

42. $(-2i)(6i)$

43. $(6 - 2i)(6 + 4i)$

44. Find the missing value to complete the square: $x^2 + 6x + \underline{\hspace{1cm}}$

Solve the quadratic equation using any method (*factoring, square roots, quadratic formula, or completing the square*).

45. $x^2 + 19x + 90 = 0$

46. $x^2 - 13x + 36 = 0$

47. $x^2 - 4x - 32 = 0$

48. $3x^2 + 14x + 8 = 0$

49. $6x^2 = 18$

50. $5x^2 - 36x - 81 = 0$

51. $x^2 + 20x + 100 = 64$

52. $49x^2 + 25 = 0$

Rewrite the equation in vertex form.

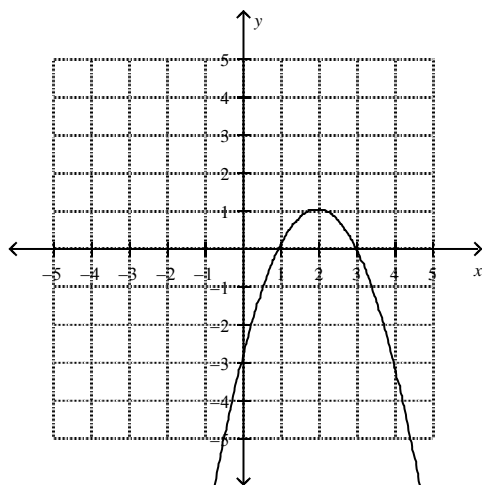
53. $y = x^2 + 6x + 4$

54. $y = -2x^2 - 8x - 11$

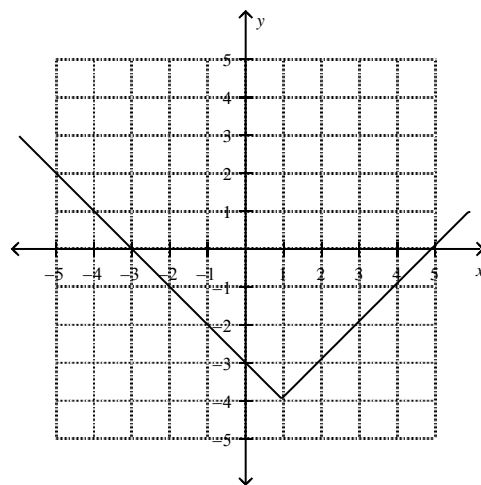
NON-CALCULATOR SECTION:

From the following choices, determine the parent function for each graph below:

$y = x$, $y = x^2$, $y = |x|$, or $y = \sqrt{x}$



55.



56.

Write in standard form an equation of the line passing through the given point with the given slope.

57. slope = -7 ; $(2, 3)$

Find an equation for the line:

58. through $(8, 0)$ and perpendicular to $y = \frac{5}{2}x - 3$.

59. through $(7, 3)$ and parallel to $y = 2x - 2$.

60. through $(-3, 6)$ and horizontal.

61. through $(4, -2)$ and vertical.

Solve the matrix equation.

62. $\begin{bmatrix} 9 & -40 \\ 2 & -9 \end{bmatrix} X = \begin{bmatrix} 2 \\ 5 \end{bmatrix}$

63. $\begin{bmatrix} -3 & 11 \\ 2 & -7 \end{bmatrix} X = \begin{bmatrix} -9 & 7 \\ 1 & -4 \end{bmatrix}$

Find the product.

64. $\begin{bmatrix} 5 & -7 \\ -3 & -4 \end{bmatrix} \begin{bmatrix} -9 & -2 \\ 4 & 4 \end{bmatrix}$

65. $\begin{bmatrix} 1 & 1 & -4 \\ 5 & 6 & 0 \end{bmatrix} \begin{bmatrix} 9 \\ 1 \\ -7 \end{bmatrix}$

Evaluate the determinant of the matrix.

66. $\begin{bmatrix} -6 & 5 \\ -6 & -7 \end{bmatrix}$

67. $\begin{bmatrix} -6 & 5 & 5 \\ 5 & -1 & -4 \\ -4 & -5 & -5 \end{bmatrix}$

68. $\begin{bmatrix} 1 & 3 \\ -2 & -1 \end{bmatrix}$

Write the equation of the parabola in vertex form.

69. vertex $(-4, 2)$, point $(1, 77)$

70. vertex $(0, -2)$, point $(-3, -11)$

Factor the expression.

71. $-10x^2 - 25x$

72. $x^2 - 2x - 63$

73. $5x^2 - 11x - 36$

Match each equation/inequality with its graph. Then give the domain & range for each graph.

_____ 74. $y = \frac{2}{3}x + 3$

_____ 78. $3x - 4y < -12$

_____ 82. $y = -2(x - 4)^2 - 3$

_____ 75. $y = x^2 + 2x + 4$

_____ 79. $x = 4$

_____ 83. $y = 4$

_____ 76. $y = 2|x + 1| + 4$

_____ 80. $y = -x^2 + 2x + 2$

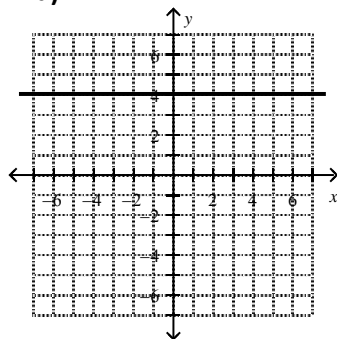
_____ 84. $-2x + 3y \leq 9$

_____ 77. $y = -2(x + 4)^2 + 3$

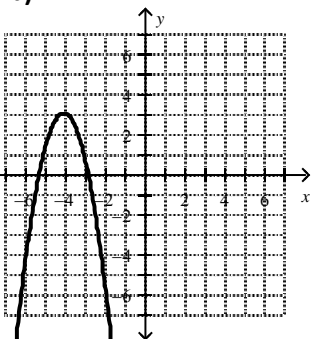
_____ 81. $y = 2|x - 1| - 4$

_____ 85. $y = \frac{2}{3}x - 2$

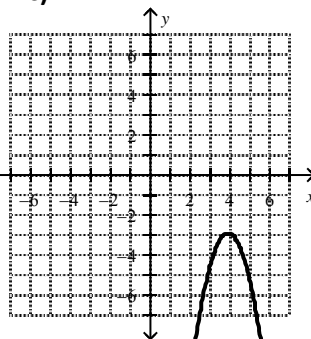
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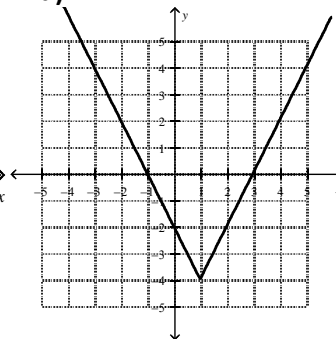
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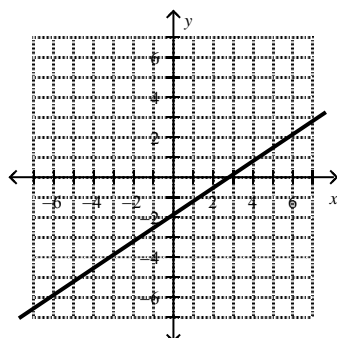
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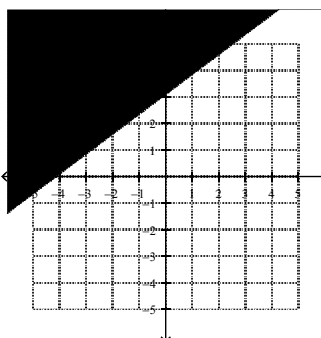
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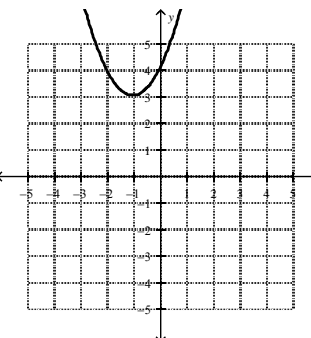
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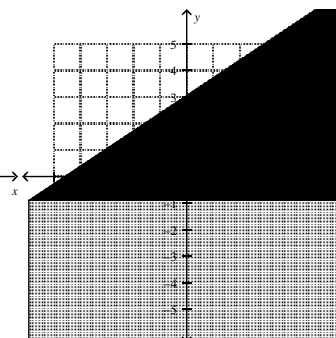
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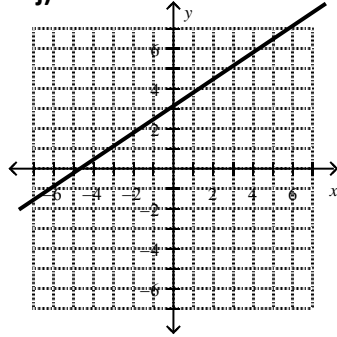
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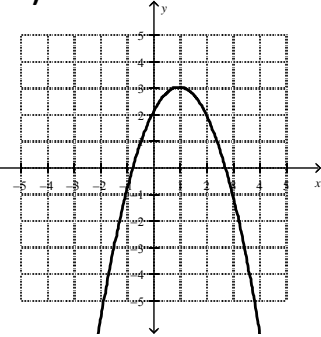
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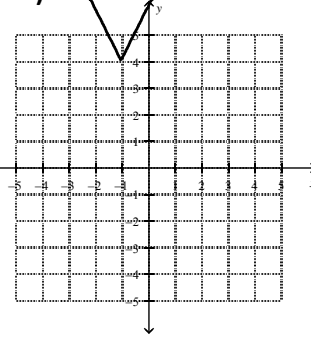
j)



k)



m)



n)

