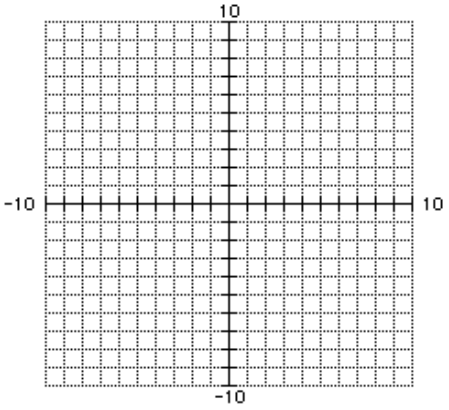
Algebra II- Honor
Semester I Exam Review

Name:_____

Solve by graphing.

1. $y < -x - 2$
   $y - 4 > x$



Solve

$6a - 2b = 18$

2. $3b + 5c = -34$
   $a + 6c = -28$

3. $x - y = 4$
   $2x - 3y = -19$

4. $x + 2y = 5$
   $2x - y = 1$

Simplify each expression.

5. $(5x + 7) - (3y + 7) + 2(x + 3y)$

6. $(3x^3 + 7x^2 + 8x) - (6x - 7x^2 + 8x^3)$

7. $\dfrac{(2x^2y)^3}{(x^4y)^2}$

8. $(3x - 1)(2x + 7)$

9. $(5x + 7)^2$

10. $2\sqrt{32} - \sqrt{18} + 3\sqrt{98}$

11. $\sqrt[3]{24x^5y^3z^6}$

12. $\left(3 + \sqrt{2}\right)(4 - \sqrt{2})$

13. $\sqrt[3]{-8x^5y^6}$

14. $\sqrt[3]{\dfrac{2}{3}}$

15. $(p^3)^{-2}$

16. $(3x^{-3}y^{-2})^{-2}$

17. $\dfrac{1}{4^{\frac{1}{3}}}$

18. $x^{\frac{-7}{10}}$

Solve

19. Solve for b: $3(a - 2) = b + 4$

20. $8q - \dfrac{q}{3} = 46$

21. $\dfrac{3a+3}{4} = \dfrac{5}{2}$

Solve: Graph the solution set.

22. $|2x - 1| \le 5$

23. $3x - 5 > 4x + 3$

24. $|x-5|+2=-4$

25. $7-|m-1|=3$

If $f(x) = 5x - 1$, $g(x) = x^3$ and $h(x) = 3x^2 - 1$, find each.

26. $f(3)$

27. $g(-2)$

28. $h(c-2)$

Factor Completely.

29. $m^3 - 8$

30. $6x^2 + 71x - 12$

31. $35ac - 3bd - 7ad + 15bc$

32. $16z^2 - 25$

33. $6x^3 + 162$

Simplify:

34. $\dfrac{3}{2+\sqrt{3}}$

35. $\dfrac{2+i}{3-4i}$

36. i^{67}

37. $\dfrac{2}{x-y^{\frac{1}{2}}}$

38. $(1 - 2i)(2 + 3i)$

39. $(7 + 2i) + (-4 - 3i)$

40. $\begin{bmatrix} 2 & -5 \\ -1 & 2 \end{bmatrix} - \begin{bmatrix} 1 & -2 \\ 2 & 3 \end{bmatrix}$

41. $2\begin{bmatrix} 2 & 1 & -1 \\ 3 & 0 & 1 \\ -1 & -2 & 2 \end{bmatrix} + 3\begin{bmatrix} 0 & 0 & 2 \\ 0 & 2 & 0 \\ 2 & 0 & 0 \end{bmatrix}$

42. $\begin{bmatrix} 2 & 0 \\ -1 & 2 \end{bmatrix} . \begin{bmatrix} 1 & 2 & 0 \\ 3 & 0 & -2 \end{bmatrix}$

43. $\begin{vmatrix} -1 & 0 & 2 \\ 1 & 1 & -1 \\ 2 & 0 & -2 \end{vmatrix}$

44. $\begin{bmatrix} 3 & 4 \\ 2 & -5 \end{bmatrix}^{-1}$

45. $4m + \begin{bmatrix} 3 & 2 \\ -4 & 6 \end{bmatrix} = \begin{bmatrix} 15 & -6 \\ 4 & 18 \end{bmatrix}$

46. Find the missing numbers If $A_{2x?} x B_{3x?\_} = C_{2x7}$

Solve:

47. $(x+1)^{\frac{1}{2}} - 1 = 2$

48. $\sqrt[3]{2m+2} = -2$

49. $\sqrt{x-1} = \sqrt{6} - \sqrt{x}$

50. $y^2 + 3 = -1$

51. $\sqrt[4]{7+3z} = 2$

52. Graph the system of inequalities, then find the coordinates of the vertices of the feasible region. Find the **maximum value** of the given function for this region.

$y \geq 1$
$1 \leq x \leq 3$
$y \leq x + 2$
$f(x, y) = 2x - 3y$

Find each quotient.

53. $(n^4 + 5n^3 - 6n + 3) \div (n + 3)$.

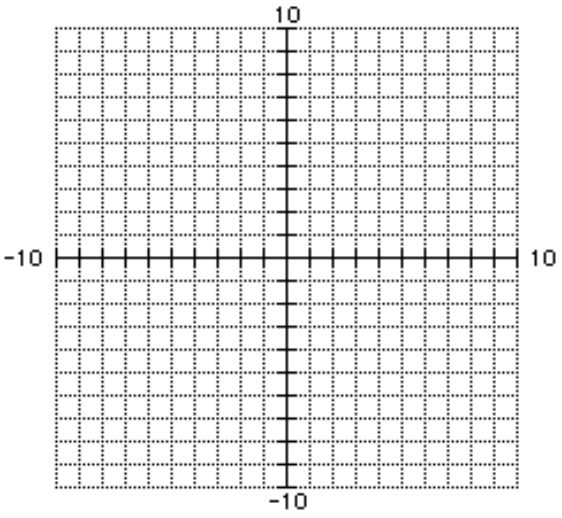
54. $(6a^4b^2 - 22a^3b - 9a^2 + 9ab^3 - 17) \div (3a^2b)$

55. $(5s^3 + s^2 - 7) \div (s + 1)$

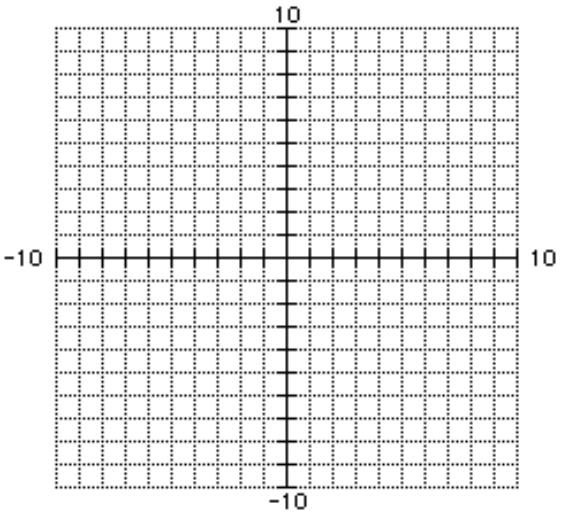
56. $(10y^4 + 3y^2 - 7)(2y - 1)^{-1}$

Graph.

57. $y \geq \frac{2}{3}x + 2$



58. $x = 2$



59. When solving a quadratic by graphing and you get a zero as an answer what does that mean?

60. When solving a quadratic by graphing and you get an imaginary number as an answer what does that mean?

61. When solving a quadratic by graphing and you get a real number as an answer what does that mean?

Solve by graphing.

62) $x^2+6x=27$

Solve by factoring

63) $r^2-3r=4$

Solve by completing the square.

64) $2x^2-10x+5=0$

65) Find the quadratic equation that has the given roots $3\pm i$

Solve using the quadratic formula and name the discriminant.

66) $x^2-3x-40=0$

discriminant:_____
FINAL solution:_____

67) $7x^2+6x+2=0$

discriminant:_____
FINAL solution:_____

Write each equation in the form of *f(x)*= a(x –h)^2 + k if it is not already in that form. Name the vertex, axis of symmetry, and direction of the opening.

68) $f(x)=\frac{-2}{3}(x-3)^2-5$

Vertex:_____
Axis of symmetry:_____
Opens:_____

69) $f(x)=x^2+6x-3$

Vertex:_____
Axis:_____
Opens:_____

Write a quadratic equation for the parabola that passes through the given points.

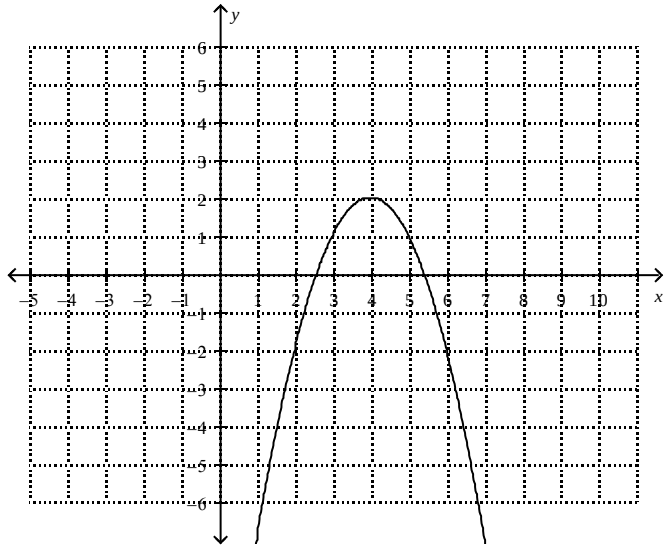
70) (3,4), (2, -1), (1, 3)

71) vertex (-2, 5) point (1, 2)

Solve the inequality.

72) $0 \leq -x^2-3x+10$

73.)Which quadratic function does the graph represent?



a. $f(x) = -x^2 + 8x - 14$

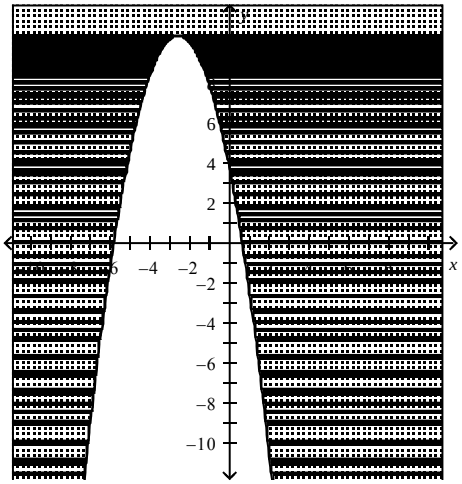
b. $f(x) = -x^2 - 8x - 14$

c. $f(x) = -x^2 + 8x + 14$

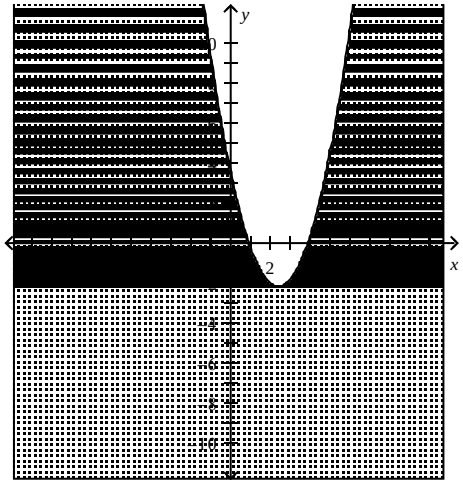
d. $f(x) = x^2 + 8x - 14$

74).Graph $y \le -x^2 - 5x + 4$.

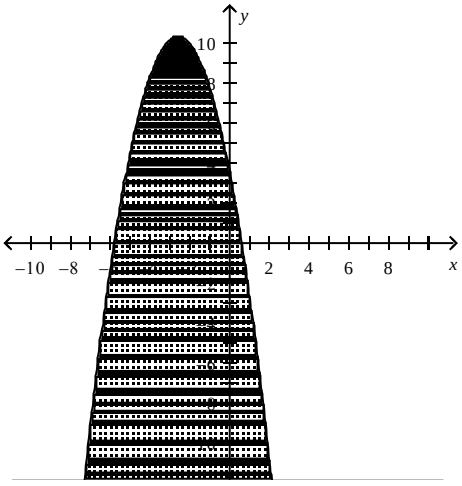
a.



c.



b.



d.