Algebra II – Semester I Review: Name: _____

Review Chapter 1, Chapter 4, Polynomials, Chapter 9, and Chapter 6

Chapter 4 – Quadratic Functions & Factoring

1. Solve $x^2 - 9x + 8 = 0$ 2. Solve $x^2 = 100$

3. Solve $2(x - 5)^2 = 128$ 4. Solve $3x^2 - 48 = 0$

5. Factor $81x^2 - 36$ 6. Factor $2x^3 - 10x^2 + 12x$

(7-9) Write the expression as a complex number in standard form.

7. $-5i(8 + 7i)$ 8. $(2 - 12i) + (8 + 9i)$ 9. $(3 + i)(10 + 7i)$

10. In the quadratic formula $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$, $b^2 - 4ac$ is called the

11. What are all solutions of $x^2 + 8x - 4 = 0$?
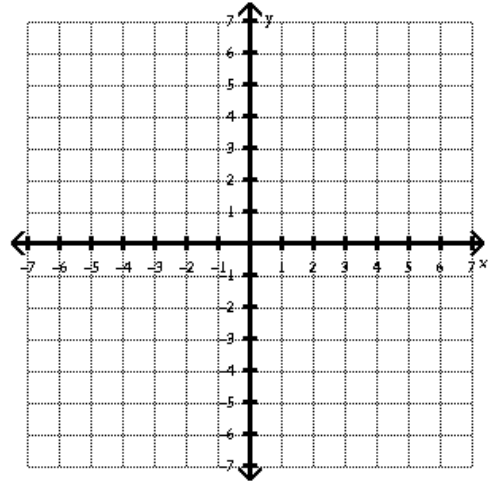
12. Graph the function.
a.) What form is the equation in?
 b.) Identify the Vertex
c.) Make a Table
 d.) Write an equation for the axis of symmetry.

$$y = 2(x - 3)(x + 1)$$

a.)

b.)

c.)   d.)

x					
y					

Polynomials & Polynomial Functions

13. Simplify $\dfrac{4x^{-5}y^{8}}{16x^{4}y^{-5}}$

14. Simplify $\left(\dfrac{x^{4}}{y^{-4}}\right)^{-3}$

15. Perform the indicated operation.

$(3x^3 + 7x^2 - 2x) - (2x^3 + 6x^2 - 1)$

16. Perform the indicated operation.

$(2x - 1)^3$

17. Given polynomial f(x) and a factor of f(x), factor f(x) completely. $f(x) = x^3 + 6x^2 + 5x - 12; x - 1$

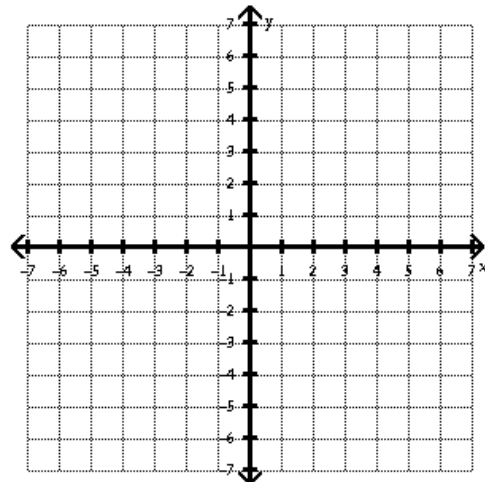18. Simplify $\dfrac{x^8 y^5}{x^5 y^{-5}}$

19. Find all real zeros of the function $x^3 + 9x^2 + 6x - 56$.

20. How many turning points does the function $y = 7x^3 + 3x^2 - 1$ have?

21. Simplify the expression $(-7a^2 b^5 c^3)^4$

22. Use synthetic division to evaluate $f(k) = 2k^3 + 5k^2 - 3k + 4$ divided by $(k+2)$

23. Graph the following function: $f(x) = -x^3 - 2x$

24. Write the polynomial function that has the zeros 2, -2, and 1, that has a leading coefficient of 1.

Chapter 6 – Rational Exponents & Radical Functions

(25-34), evaluate/simplify.

25.　$16^{3/2}$

26.　$\left(\sqrt[3]{8}\right)^{-2}$

27.　$\dfrac{1}{64^{-2/3}}$

28.　$\left(5^{\frac{1}{3}}\cdot 7^{\frac{1}{4}}\right)^{3}$

29.　$\dfrac{6xy^{\frac{3}{4}}}{3x^{\frac{1}{2}}y^{\frac{1}{2}}}$

30.　$\sqrt[6]{256}$

31.　$\sqrt[4]{12x^{2}y^{6}z^{12}}$

32.　$-7\sqrt[3]{y}+16\sqrt[3]{y}$

33.　$\sqrt{75}+\sqrt{108}$

34.　$\dfrac{2}{3+\sqrt{5}}$

(35-38), let f(x) = 2x + 12 and g(x) = x² – 1. Perform the indicated operation.

35.　f(x) + g(x)

36.　$f(x)\cdot g(x)$

37.　f(g(x))

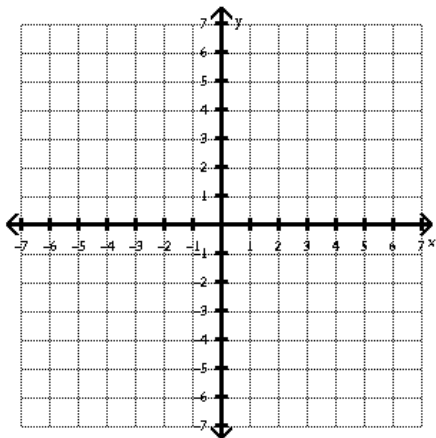38.　g(g(-1))

(39-42), solve the equation.

39.　$\sqrt{3x+10}=8$

40.　$3(16x)^{\frac{1}{3}}-7=17$

41. $-4\sqrt[3]{x+10}+3=15$
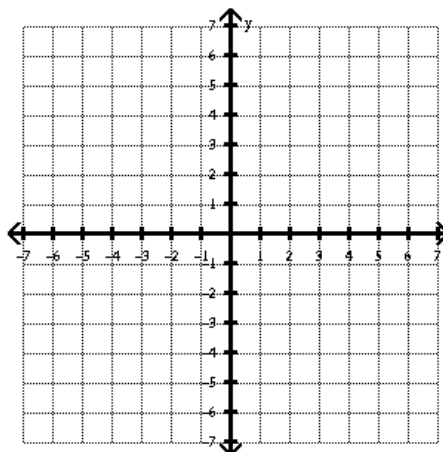
42. $x=\sqrt{4x-3}$

43. Graph the following functions:

     a. $f(x)=\sqrt{x-1}+3$

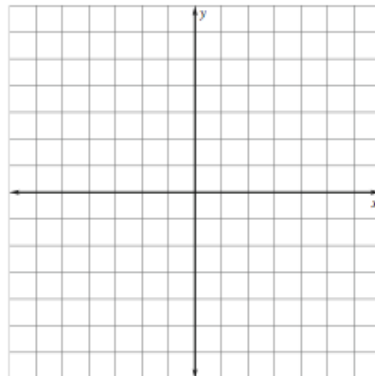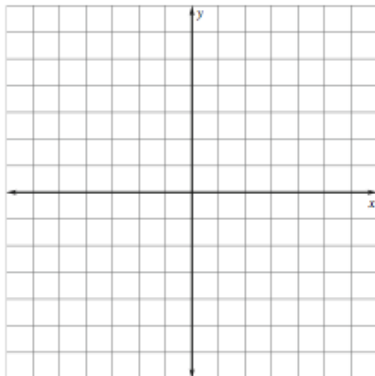   b. $f(x)=\sqrt[3]{x+3}-2$

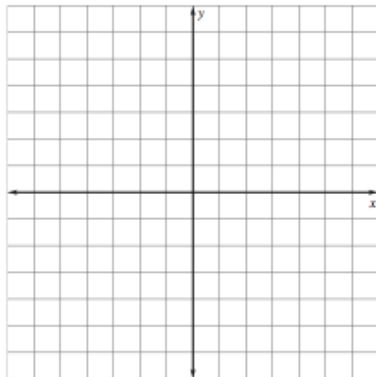## Chapter 9 – Conics: Circles and Parabolas

(44-47) Classify the conic section and write its equation in standard form. Then graph the equation and label key characteristics of the graph.

44. $x^2+y^2+2x+2y-7=0$

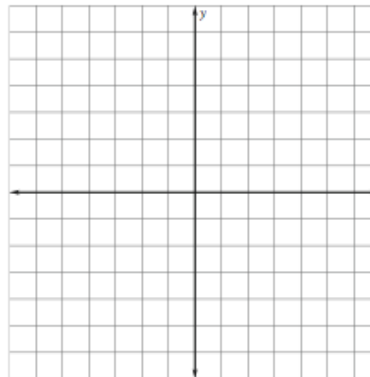45. $x^2+y^2+8x+12y+3=0$

46. $y^2 + 8y + 4x = 0$

47. $x^2 - 6x - 4y + 17 = 0$

48. Write the equation of a parabola with directrix x=4 and vertex (0,0)

49. Write the equation of a circle with center (-3, 5) and radius 5.

(50-51), solve the system using substitution or elimination.

50.
$$x^2 + y^2 - 13 = 0$$
$$y - x^2 + 1 = 0$$

51.
$$y^2 = -2x$$
$$y = x + 4$$

52. This is not your only study tool! Go through past study guides of each chapter. You can find copies of each study guide at msklug.weebly.com under "Alg 2 Exam 1 Prep". Happy Studying! ☺