ALGEBRA II Name_____

Semester 1 Review

Solve.

1. $2(x + 6) = -2(x - 4)$

2. $\frac{3}{4}\left(\frac{4}{5}x - 2\right) = \frac{11}{4}$

3. $2.7n + 4.3 = 12.94$

4. $-\frac{2}{3}\left(\frac{6}{5}x - \frac{7}{10}\right) = \frac{17}{20}$

Solve the inequalities.

5. $-2 < -2n + 1 < 7$

6. $-5x - 4 < -1.4$ or $-2x + 1 > 11$

Solve the absolute value equation.

7. $|2x - 5| = 11$

8. $3 + |6 - 3x| = 9$

Evaluate the function.

9. $f(x) = 80 - 3x$; $f(5)$

10. $f(x) = x^2 + 4x - 7$; $f(-1)$

Solve the system of equations.

11. $x + y = 1$
$2x - 3y = 12$

12. $7x + y = -17$
$3x - 10y = 24$

13. $x + 2y - 6z = 23$
$x + 3y + z = 4$
$2x + 5y - 4z = 24$

Write an equation(s) and solve.

14. If you have 5 times as many dimes as nickels and a total $3.30, how many of each type of coin do you have?

15. The sum of three consecutive odd integers is between 50 and 65. What are the integers?

16. Sailing with the current, a boat takes 3 hours to travel 48 miles. The return trip, against the current, takes 4 hours. Find the speed of the boat in still water and the speed of the current.

Factor completely.

17. $2x^2 + x - 10$

18. $5x^2 - 2x - 7$

19. $216x^3 + 1$

20. $27x^3 - 64$

Find all of the solutions of the equation.

21. $3x^2 + 15x = -x^2 - 13x + 15$

22. $x^2 + 10x = 2x^2 + 21x + 24$

Find the product.

23. $(3 + i)(1 - 5i)$

24. $(-4 + 2i)(7 - 3i)$

25. $4i(6 + 2i)$

26. $-5i(3 + 6i)$

Simplify.

27. $(3 + 4i)^2$

28. $(2 - 3i)^2$

Find the solution(s) of each equation.

29. $2x^2 - 3x + 2 = 0$

30. $4x^2 + 10x + 7 = 0$

31. $2x^2 + 8x = x^2 + 3$

32. $40x - 7x^2 = 101 - 3x^2$

Simplify.

33. $3^3 \cdot -3^4$

34. $-4^2 \cdot -4^3$

35. $(2^4)^3$

36. $(4^2)^3$

37. $(4x^{-1})^4(2x^5)$

38. $(-3y^{-2})^{-2}(y^4)$

Solve.

39. $\sqrt{x + 56} = 16$

40. $\sqrt{4x - 7} + 2 = 5$

41. $\sqrt{3x + 3} = 2\sqrt{x}$

42. $\sqrt{4x - 3} = \sqrt{3x}$

Find the zeros of the function.

43. $y = 4x^2 + 4x + 1$

44. $Y = 2x^2 - 5x - 3$

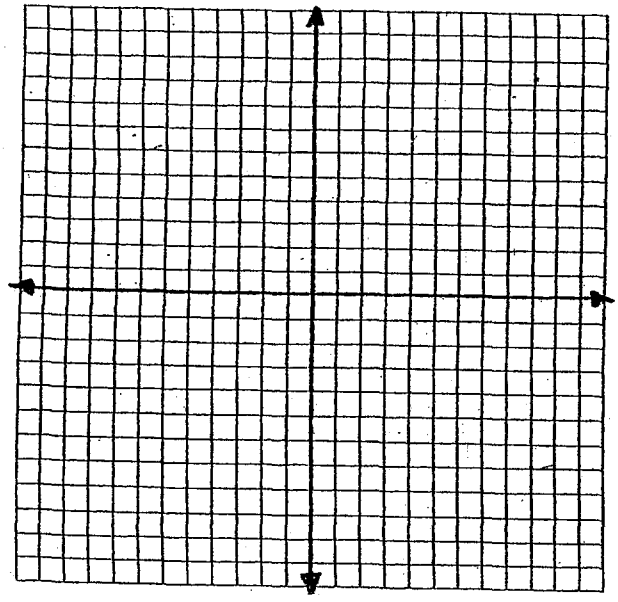
Solve.

45. The length of a rectangle is four times the width of the rectangle. If both are increased by 2 cm, the new rectangle has an area of 10 cm^2. Find the length and width of the original rectangle.

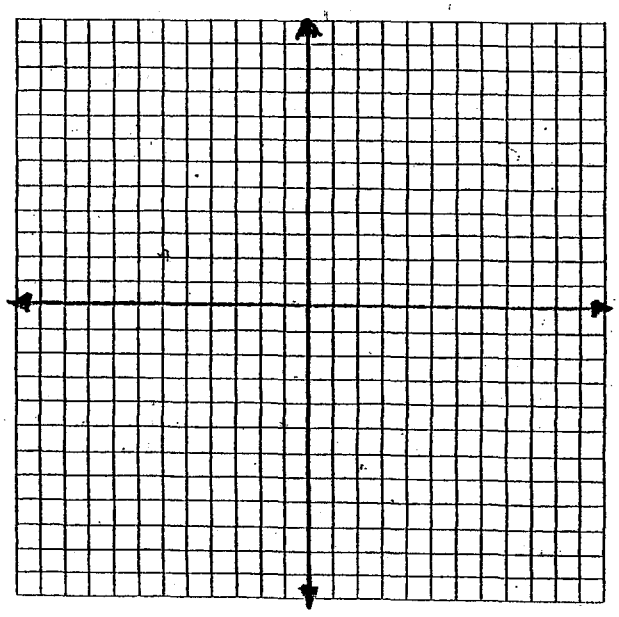
46. The sum of a number and 72 is equal to the square of the number. Find the number.

For each quadratic function find (a) vertex form, (b) co-ordinates of the vertex, (c) opens up/down, (d) wider, narrower, or the same as $y=x^2$, (e)max/min and value, (f) domain, (g) range, (h) zeros, and (i) graph.

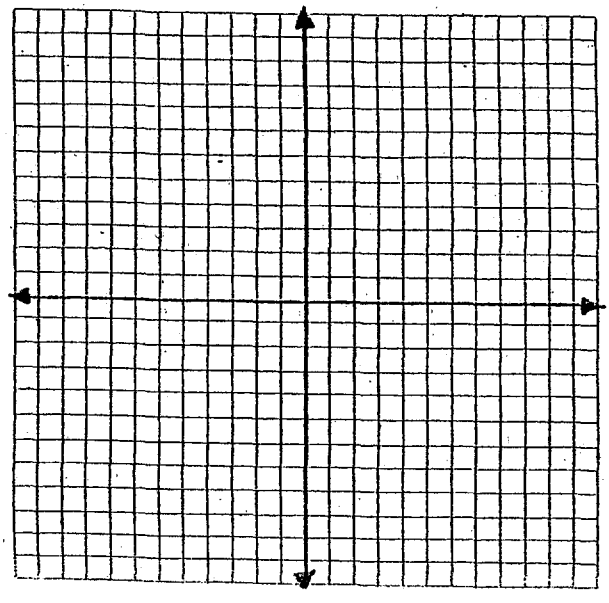
47. $f(x) = x^2 + 4$



48. $f(x) = 9 - 6x - x^2$



49. $f(x) = 4x^2 - 8x + 5$



50. $f(x) = \frac{1}{2}x^2 + 5x + 12$