Test   Chapter 6   Algebra II   Name _____

Do not write on this paper (except for you name). Show all work, including your answers, on your own paper. Leave answers in simplest radical form or fractions – not decimal approximations!

1. Complete the square for the following: $x^2 + 18x$

2. Complete the square for the following: $y^2 - 5y$

3. Solve the equation $x^2 + 4x + 2 = 7$ by completing the square.

4. Write a function of the form $g(x) = (x - h)^2 + k$ whose graph represents a translation
   of the graph   of $f(x) = x^2$ three units to the left and five units down.

5. Determine the vertex and axis of symmetry for the parabola $f(x) = x^2 - 4x + 5$.

6. Use the quadratic formula to solve the equation $2x^2 - 5x + 1 = 0$.

7. Use the quadratic formula to solve the equation $x^2 + 3x + 2 = 10$.

8. Use the discriminant to determine the number of solutions and the nature of the
   solutions of the equation: $-3x^2 - 2x + 5 = 0$.

9. Use the discriminant to determine the number of solutions and the nature of the
   solutions of the equation: $x^2 + 1 = 0$.

10. Determine the sum and product of the solutions to the equation $-x^2 + 3x - 10 = 0$.

11. Write a quadratic equation that has the solutions $x = -5$ and $x = 4$.

12. Choose one of the following equations to solve:

     (A) $x^4 - 5x^2 + 6 = 0$
     (B) $(x - 3)^2 + (x - 3) - 2 = 0$

13. Solve by factoring: $2x^2 + 5x - 3 = 0$.

14. Solve by factoring: $x^3 + 2x^2 = 15x$.

15. Use a system of equations to determine the equation of the quadratic function that
     passes through the points (0, 4), (1, 0), and (2, -10).