Completing the Square

1. Use a square root to solve the equation.

   a) $(x+5)^2 = 16$

   b) $(r+3)^2 = 13$

2. Solve the equation. Try to notice that the left side is a perfect square trinomial, and use that to make the equation resemble those from the previous exercise.

   a) $x+1+20x+100 = 5$

   b) $16t^2 - 24t - 9 = 64$

3. Solve the equation by completing the square.

   a) $x^2 + 6x = 55$

   b) $t^2 + 4t = -1$

c) $y^2 + 10y + 24 = 0$

d) $z^2 + 5z - 1 = 0$

4. For each quadratic function given in standard form, give the formula for the function in vertex form. Then state the location of the vertex on the graph of that function.

a) $f(x) = x^2 + 4x - 3$

b) $g(x) = 4x^2 - 32x - 2$

5. For each quadratic function given in standard form, give the formula for the function in vertex form. Then state the domain and the range of that function.

a) $f(x) = x^2 - 14x + 43$

b) $g(x) = -x^2 - 18x - 80$