**Quadratic Functions**

1. Graph the following quadratic functions. Include the vertex, the axis of symmetry and any intercepts. Sketch and clearly label these features.

 (a) y = -(x – 3)2 (b) f(x) = (x + 2)2 – 4



 Vertex: \_\_\_\_\_\_\_\_\_\_ Axis: \_\_\_\_\_ Vertex: \_\_\_\_\_\_\_\_\_\_ Axis: \_\_\_\_\_

 Intercepts: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Intercepts: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 (c) g(x) = -x2 + 9 (d) h(x) = ½ (x + 3)2 + 4



 Vertex: \_\_\_\_\_\_\_\_\_\_ Axis: \_\_\_\_\_ Vertex: \_\_\_\_\_\_\_\_\_\_ Axis: \_\_\_\_\_

 Intercepts: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Intercepts: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Graph the following quadratic functions. Include the vertex, the axis of symmetry and any intercepts. Sketch and clearly label these features.

 (a) y = x2 – 4x – 5 (b) f(x) = x2 + 2x – 3



 Vertex: \_\_\_\_\_\_\_\_\_\_ Axis: \_\_\_\_\_ Vertex: \_\_\_\_\_\_\_\_\_\_ Axis: \_\_\_\_\_

 Intercepts: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Intercepts: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 (c) g(x) = 2x2 + 2x + 5 (d) h(x) = -x2 − 2x + 8



 Vertex: \_\_\_\_\_\_\_\_\_\_ Axis: \_\_\_\_\_ Vertex: \_\_\_\_\_\_\_\_\_\_ Axis: \_\_\_\_\_

 Intercepts: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Intercepts: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. A ball is thrown vertically upward from the top of a building 144 feet tall with an initial velocity of 96 feet per second. The distance s (in feet) of the ball from the ground after t seconds is given by the formula:

 s = -16t2 + 96t + 144

 After how many seconds does the ball strike the ground? Round to the nearest tenth. [Hint: At ground level, s = 0.]

4. A 50-foot supporting wire is to be attached to an 80-foot antenna. Because of surrounding buildings, sidewalks, and roadways, the wire must be attached exactly 20 feet from the base of the antenna. How high is the wire attached? Round to the nearest tenth.