Section 4.1 Extra Practice

1. How many $x$-intercepts does the graph of each quadratic function have?
   
   a) 
   
   b) 
   
   c) 

2. What are the roots of the quadratic equations graphed in #1?

3. Solve by graphing.
   a) $0 = -a^2 - 3a - 4$
   b) $12 = -3b^2 - 12b$
   c) $6c^2 + 30c = 0$
   d) $d^2 - 4 = 0$

4. Determine the roots for each quadratic equation. Where integral roots cannot be found, estimate the roots to the nearest tenth.
   a) $0 = x^2 + 2.4x - 3.85$
   b) $z^2 - 15 = 0$
   c) $t^2 + t = -1$
   d) $0 = -u^2 - u + 5$

5. Solve by graphing.
   a) $t^2 - 5t - 150 = 0$
   b) $h^2 - 400 = 0$
   c) $0 = x^2 + 0.6x - 0.05$
   d) $5y^2 + 3y + 100 = 0$
6. For what values of \( m \) would the equation \( x^2 + 8x + m = 0 \) have
   a) one real root or two equal real roots?
   b) two real distinct roots?
   c) no real roots?

7. An object is launched at 21.5 m/s from a height of 2.4 m. The equation for the object’s height, \( h \), measured in metres, \( t \) seconds after launch is \( h = -4.9t^2 + 21.5t + 2.4 \). After how many seconds will the object hit the ground? Express your answer to the nearest tenth of a second.

8. A right triangle has one side that is 7 cm longer than its shortest side. The triangle’s hypotenuse is 8 cm longer than the shortest side. What are the dimensions of the triangle?