

You may only use your textbook, your notes, and your calculator on these problems. You may not use any outside resources, including tutors or solution manuals. Remember that the purpose of these quizzes is to see if you understand what you have learned on your homework, and also to tell you what you still need to study for the upcoming exam. **(NOTE: this quiz is two-sided.)**

- (2 points) Complete the square to find the vertex of the quadratic function $f(x) = -2x^2 + 5x + 18$.
- (2 points) Solve: $4 + \sqrt{x} = -2 + x$.
- (2 points) Sketch the graph of $y = -3(x - 2)^2(x + 1)^2$. Also, find all x and y intercepts, end behavior, domain and range.

4. (2 points) Find all real and imaginary solutions: $g(x) = x^3 - 2x^2 - 5x + 6$.

5. (2 points) *Shooting an Arrow*: If an archer shoots an arrow straight upward with an initial velocity of 80 ft/sec from a height of 7 ft , then its height above the ground in feet at time t in seconds is given by the function

$$h(t) = -16t^2 + 80t + 7$$

a. What is the maximum height reached by the arrow?

b. How long does it take for the arrow to reach the ground?