Section 4.3 – Supplemental Word Problems

Name: _____

1) For an archer, the height, ***h***, in feet, of the arrow on one shot can be modelled as a function of time, ***t***, in seconds, since it was fired using the function:

$$h(t) = -16t^2 + 10t + 4$$

a) Complete the square to find the maximum height of the arrow (in feet), and when does the arrow reach that height?

b) How high is the arrow after 0.2 seconds (to the nearest hundredth)? Is it on its way up or down?

c) If there was no target, how long (to the nearest hundredth) would it take for the arrow to land on the ground?

d) How high was the arrow when it was drawn on the bow (right before firing)?

2) A diver jumps from a 3-m springboard with an initial vertical velocity of 6.8m/s. Her height, *h*, in metres, above the water *t* seconds after leaving the diving board can be modeled by the function $h(t) = -4.9t^2 + 6.8t + 3$.

a) What does the *y*-intercept represent?

b) What is the height of the diver 0.6s after leaving the board?

c) What maximum height does the diver reach? When does she reach that height?

d) How long does it take before the diver hits the water?

e) What domain and range are appropriate in this situation?