Name _____________________________________________________

- No calculators allowed.
- Show sufficient work to justify each answer.
- You have 15 minutes for this quiz.

1. (3 points) Find the derivative of $\frac{\sqrt{x^2 - 5}}{x^4}$.

2. (3 points) A new atom discovered, Awesonium, has a half-life of 100 years (or until you have teenagers). If the initial amount is 50 grams, then how many grams are left after $t$ years (i.e., what is the general formula?). Hint: There’s only one thing you need to solve for to be able to write the formula. Don’t simplify or worry about decimals!
3. (2 points each) A ball is tossed straight up with an initial velocity of 16 feet per second. The ball is 5 feet above the ground when it is released. Its height at time $t$ is given by $h(t) = -16t^2 + 16t + 4$.

(a) When does the ball reach its maximum height?

(b) What is the ball’s maximum height?