

Quiz 5A, Business Calculus

Spring 2017 - Dr. Graham-Squire

Name: _____

1. (5 points) Aya wants to build a coop for her backyard chickens. It will be a large box, with a square bottom. She does not need any material for the bottom (since it will be on the ground), but the chain link side fencing will cost her \$5 per square foot and the roof will cost \$30 per square foot. She has exactly \$2000 to build the chicken coop. What is the maximum *volume* she can create for the coop?
 - (a) Draw a diagram of the situation, and label any pertinent variables.
 - (b) Write an equation to represent the cost of the coop and an equation to represent the volume.
 - (c) *Use calculus* to maximize the volume of the coop.

2. (2 points) Use the Laws of Logarithms to expand and simplify the expression:

$$\ln \frac{x^5}{\sqrt{x}(1+x)^7}$$

3. (3 points) Bob wants to invest \$1000 in a savings account that is compounded continuously. If he gets a 5% interest rate, how many years will it take for his investment to grow to \$1700? Round your answer to the nearest 0.1 years.