

NAME: _____

Math 200 Calculus I (Bueler)

2 April 2008

Quiz #7

20 points total. You have 20 minutes.

1. (5 pts) Find the critical numbers of the function:

$$g(y) = \frac{2y - 1}{y^2 + 2}.$$

2. (5 pts) A population of bacteria grows at a rate proportional to its size, so if $y(t)$ is the population at time t then $y(t) = y(0)e^{kt}$. Suppose the initial population is 3,000 bacteria and that after 8 hours the count is 60,000. Find an expression for k , the relative growth rate. (Find a simple expression for k that would be straightforward to evaluate on a calculator, if you had one.)

3. (*10 pts*) If a snowball melts so that its radius decreases at a rate of $1/2$ cm/min, find the rate at which the volume is changing when the radius is 5 cm. (Simplify your answer. Give the correct sign for your answer, and give its units.)