

Quiz #9: Practice Midterm

MATH 115, Section 42

November 10, 2006

This quiz is out of 57 points total.

1. (10 points) Find a and b so that $y = axe^{-bx}$ has a local max at the point $(2,10)$.

2. (10 points) A chemical reaction converts substance A to substance Y ; the presence of Y catalyzes the reaction. At the start of the reaction, the quantity of A present is a grams. At time t seconds later, the quantity of Y present is y grams. The rate of the reaction, in grams/ sec, is given by

$$\text{Rate} = ky(a - y), \text{ } k \text{ is a positive constant.}$$

- (a) For what values of y is the rate nonnegative? Graph the rate against y .

- (b) For what values of y is the rate a maximum?