

MA 238-02  
§1.6-2.1

# Quiz #3

score

Name: \_\_\_\_\_

22 February 1999

1. Find the solution (implicit form is fine) to the given initial value problem. (7 points)

$$\frac{dy}{dx} = \frac{y \cos x}{1 + 2y^2} \quad y(0) = 1$$

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2. A 200 milligram drug dose is administered orally. The medication moves from the stomach into the intestines at a constant rate for half an hour. The half-life of the drug in the intestines is 2 hours and the half-life in the blood system is 8 hours. Write a system of differential equations which describes the level of drug in the intestines and in the blood. Use as initial conditions that there was no drug present at time  $t = 0$ . NOTE: YOU DO NOT NEED TO SOLVE THE SYSTEM. (6 points)

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3. For the IVP  $y' = 3y$ ,  $y(0) = 2$ , calculate the first two Picard iterates ( $y_1$  and  $y_2$ ) beginning with  $y_0 = 2$ . (7 points)