Math 252 – Quiz #1

April 21, 2011 **Name:** _____

Instructor: Patricia Wrean

Total: 25 points

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1. Solve the following differential equation. Give an explicit solution (*i.e.*, solve for *m*). (5 points)

$$\frac{dm}{dt} = 4 - m^2$$

2. Solve the following initial-value problem, giving an explicit solution. (5 points)

$$y' - 2xy = x \qquad \text{if } y = 2 \text{ when } x = 0$$

3. Solve the following differential equation. Give an explicit solution. (5 points)

$$\frac{dy}{dx} = \sin^2(x - y)$$

4. Solve the following Bernoulli differential equation. (5 points)

$$x\,y' + y = \frac{\sin x}{xy^2}$$

5. Find the solution to the following equation. (5 points)

$$\left(x+\sin 2y\right)dx+\left(2x\cos 2y-2y\right)dy=0$$