

# QUIZ I:MATH 284

January 21, 2011.

NAME: \_\_\_\_\_

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SHOW ALL WORK ON THIS SHEET

1. [3pts] Fill in the table below:

ODE	Order	Linear (Y/N)	Independent Variable Name	Dependent Variable Name
$\frac{dx}{dy} + x^2 = y$				
$\frac{d^2y}{dt^2} + \frac{d^3y}{dt^3} - e^t y = 0$				
$s \frac{d\mu}{ds} + \mu + s^2 \mu = s$				

2. [5pts] Find all the values of  $m$  such that  $y(x) = x^m$  is a solution of

$$2x^2 \frac{d^2y}{dx^2} + 3x \frac{dy}{dx} - y = 0$$

3. [4pts] The function  $y(x)$  defined implicitly by  $y^3 + xy^2 = x$  is a solution of  $y'(x) = f(x, y)$ .

What is  $f(x, y)$ ?

$$f(x, y) =$$

4. [8pts] Solve the following initial value problem:

$$\frac{dy}{dx} = 3\sqrt{x+1} \sec y, \quad y(0) = 0$$

$$y(x) =$$