King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
Math 202-02   Quiz #1
Name:..ID:....................................

Exercise 1 *Consider the differential equation*

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

Discuss according to the value of the parameter m the order of the differential equation.

Exercise 2 *Consider the differential equation*

$$\frac{d^2y}{dx^2} + |y| = 0$$

Classify the differential equation according to type, order and whether it is linear or nonlinear.

Exercise 3 *Find all the regions over which the differential equation*

$$x\frac{dy}{dx} = (y-1)(2-y)$$

has a unique solution. Draw the region(s).