Department of Mathematical Sciences
KFUPM
Term 042

MATH 202/ Quiz#1/ Time allowed=50 minutes

Name: ID#:

Q 1. Give the order of the differential equation, and state whether it is linear or nonlinear :
a) $x^4y'' + (x^5 - 1)y' + x^7y = x\ln(x)$.

b) $y^4y''' + (y')^4 = x^6$.

Q 2. Determine a region of the $xy-$plane for which the following IVP: $\dfrac{dy}{dx} = \sqrt{xy}$, $y(x_0) = y_0$, has a unique solution. Justify your answer.

Q 3. Find an implicit and an explicit solution of the IVP

$$(1 + x^2)dy - (1 + y^2)dx = 0, \quad y(0) = 1.$$

Q 4. Solve the IVP $x\dfrac{dy}{dx} - 2y = x^4e^x$, $y(1) = 1$.