North South University

Mat-350, Sec-7+8+16, Fall-2021

Quiz-1, Total Marks-15, Time-15 mins

Name: Id# Date# 02/11/2021

Q1. Sketch the slope field of the following differential equation:

$$y^{\frac{5}{2}}\frac{dy}{dx} + y^{\frac{7}{2}} = ky^2$$

Hence show the solution passing through $y(0) = 1$.

Is it Bernoulli's equation? Solve the equation.

Q2. What is the condition for a differential equation to be exact? Determine whether the given differential equation is exact or not. If it is not, make it exact, then solve it.

$$\boldsymbol{k\left(2y\sin x\cos x - y + 2y^2e^{xy^2}\right)dx = k\left(x - \sin^2 x - 4xye^{xy^2}\right)dy.}$$

[Where $k \neq 0$ is the 5th digit of your student Id# . If $k = 0$ then choose $k = 1$.]