King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics

Math 202 **Section .....** **Serial #: ....** **Quiz 2(a) (Term 172)**

Name : ..... **ID** #..... **Marks** #: ...../8

1. Solve the differential equation $\frac{dy}{dx} = \cot^2(x+y)$ by using an appropriate substitution.

2. The population increases at a rate proportional to the number of people present at time t. After 3 years, the population will be 10000 and 80000 after 10 years. Write the expression for initial population.

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Math 202 **Section .....** **Serial #: ....** **Quiz 2(b) (Term 172)**

Name : ..... **ID** #..... **Marks** #: ...../8

1. Change the following differential equation to a linear DE by a suitable substitution **(Do not solve the new DE)**:

$$x^2\frac{dy}{dx} - xy = -y^2$$

2. A thermometer is taken from inside room to outside where the air temperature is 5° F. After 1 minute, the thermometer reads $55^\circ F$ and after 5 minutes it reads $30^\circ F$. What was the initial temperature inside the room?

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Name : ..... **ID** #..... **Marks** #: ...../8

1. Solve the differential equation: $6xy\,dx + (4y + 9x^2)\,dy = 0$

2. Solve the differential equation: $x \sin \dfrac{y}{x}\,dy = \left(y \sin \dfrac{y}{x} - x\right)\,dx$