

Quiz 01

Name: _____ PUID: _____
Section Number: _____

Given the initial value problem

$$\frac{dy}{dx} = f(x, y) = xe^{x^2-y}, \quad y(0) = 0 \quad (1)$$

(9 points) (a) Circle the correct choice below and fill in the answer boxes to complete the statement.

The Existence and Uniqueness of Solution Theorem **implies** / **does not implies** the existence of a unique solution because $f(x, y) = xe^{x^2-y}$ and $\frac{\partial f(x, y)}{\partial y} = \text{-----}$ both **are** / **are not** continuous in a rectangle containing the point.

(11 points) (b) Solve this initial value problem (1).

Please answer the question in complete sentences in a **clearly** prepared manuscript. (**No credits** for the answer without necessary explanation.)