Quiz No: 1, Math 202: Section _____ ID_____ Name_____

1. Verify that $e^y = x^2 + y^2 + c$ is a solution of the differential equation $\frac{dy}{dx} = \frac{2x}{e^y - 2y}$

Q 2. Check if the given differential equation $\frac{dy}{dx} = \frac{\sqrt{y^2 - 1}}{x}$ has a unique solution through (1, 2).

- $f(x, y) = \frac{\sqrt{y^2 - 1}}{x}$
- Domain of the function is: {set of all points (x, y) such that $x \neq 0, y \in (-\infty, -1] U [1, \infty)$ }
- $\frac{\partial y}{\partial y} = \frac{y}{x\sqrt{y^2 - 1}}$
- $\frac{\partial y}{\partial y}$ is continuous on set of points (x, y) such that $x \neq 0, y \in (-\infty, -1) U (1, \infty)$
- The equation has a unique solution through the given point.