

Quiz 3
11 June 2024

Answer the questions in the spaces provided. **Show all of your work and circle the answer you would like to have graded for each question.**

Name: _____

1. Compute **all four second-order** partial derivatives of $f(x, y) = e^{xy+y}$.

2. Argue why the function $f(x, y) = \frac{3x^2y}{x^4 + y^2}$ is **not differentiable** at $(0, 0)$.

3. Find the linear approximation of $f(x, y) = \sqrt{xy}$ at the point $(1, 4)$ and then **use it to estimate** $f(0.98, 4.04)$.