Math 233 - Quiz 9

Name _____

October 30, 2025

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (2 points) Under which conditions do you expect mixed partial derivatives to be equal?

2. (2 points) Let $f(x, y) = y^2x^4e^x + 2$. Compute f_{yxyxy}.

3. (3 points) Let $A(x, y, z) = z^3e^{xz}\sec(y)$. Use differentials to estimate ΔA when (x, y, z) changes from $(0, 0, 3)$ to $(0.1, 0.05, 2.97)$.

4. (3 points) Find the linearization of $f(x, y) = x^2 - xy + \frac{1}{2}y^2 + 3$ at the point $(3, 2)$. Then use your linearization to approximate $f(2.97, 1.99)$.