

Math 233 - Quiz 6

October 20, 2022

Name _____

Score _____

Show all work to receive full credit. Supply explanations when necessary. This quiz is due October 25.

1. (4 points) Determine the limit or show that it does not exist.

(a) $\lim_{(x,y) \rightarrow (3,1)} \frac{3y - x + xy - 3}{y - 1}$

(b) $\lim_{(x,y) \rightarrow (2,2)} \frac{x^2y^2 - 8x}{x^2y - 8}$

Turn over.

2. (2 points) Let $g(x, y) = \ln(x \sqrt{x^2 + y^4})$. Find g_x and g_y .

3. (2 points) Let $f(x, y, z) = e^{-x} \sin(yz)$. Find the mixed partial derivative f_{yzy} .

4. (2 points) Let $w = 3xy^2z^3 + e^{-x^2y}$. Use differentials to approximate Δw as (x, y, z) changes from $(0, 1, 2)$ to $(0.01, 0.97, 2.02)$.