

Math 233 - Quiz 9

April 6, 2023

Name _____

Score _____

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

1. (3 points) Find an equation of the plane tangent to the graph of $x^2 + 4xy - y^3 - z = 0$ at the point where $(x, y) = (3, 2)$.

2. (4 points) Let $z = \ln(x^2 + 4y)$, where $x = r \cos \theta$ and $y = r \sin \theta$. Use the appropriate multi-variable chain rule to determine formulas for $\partial z / \partial r$ and $\partial z / \partial \theta$.

3. (3 points) The graph of the equation $x^3 + xy^2 = 3x^2 - y^2$ is called a *trisectrix of Maclaurin*. Use partial derivatives to find dy/dx .