Math 233 - Quiz 9

Name _____

April 9, 2026

Score _____

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

1. (3 points) Use an appropriate linearization to approximate $e^{0.1} + \sin(3.1)$.

2. (3 points) Find an equation of the plane tangent to the graph of $z = \tan^{-1}(xy)$ at the point where $x = 1/2$ and $y = 2$.

3. (2 points) Suppose that w is a differentiable function of x, y, and z. Further suppose that x, y, and z are differentiable functions of s and t. Write the chain rule formula for $\partial w/\partial s$.

4. (2 points) Assume that y is implicitly defined as a function of x by the equation $x^3 - 4xy + 2y^3 = x^2 + y$. Use partial derivatives to find dy/dx.