

YOUR NAME: _____

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Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Suppose that

$$g(x, y) = x^2 - y^2, \quad x = e^u \cos v, \quad y = e^u \sin v.$$

Compute $\frac{\partial g}{\partial u}$ at $(u, v) = (0, 1)$.

2. Find the critical points of the function

$$f(x, y) = 4x - 3x^3 - 2xy^2.$$