

Problem Set 4 Calculus 3 Due 10/1/2004

You are encouraged to work in groups of two to four on this assignment and make a single group submission. Each problem is worth 5 points. For full credit indicate clearly how you reached your answer. All work must be legible and submitted on clean paper without ragged edges.

1. Find and classify all critical points of the function $f(x, y) = x^4 + y^4 - 4xy$.
2. Find and classify all critical points of the function $f(x, y) = x^4 + y^4 - axy$ in terms of the value of the constant a .
3. Find and classify all critical points of the function $f(x, y) = x^3 - xy + y^2$.
4. Find the closest points on the surface $z = x^2 + y^2$ to the point $(1, 0, 2)$.

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