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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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Problem Set 4 Calculus 3 Due 10/1/2004

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