

Math 203 — Partial derivatives

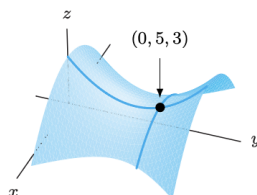
Problem 1. Compute f_x and f_y for each function below.

a. $f(x, y) = 5x^2y^3 + 8xy^2 - 3x^2$

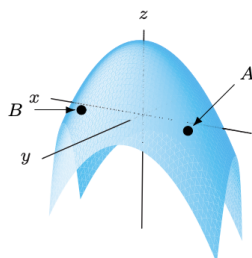
b. $f(x, y) = \sin(x^2y^3) + \cos(y^2)$

c. $f(x, y) = xe^{x^2y^2}$

Problem 2. The figure below shows the graph of $f(x, y)$. What are the signs of $f_x(0, 5)$ and $f_y(0, 5)$?



Problem 3. The figure below shows the graph of $f(x, y)$. What are the signs of $f_x(A)$, $f_y(A)$, $f_x(B)$, and $f_y(B)$?



Problem 4. The figure below shows a contour plot of $f(x, y)$. Notice the curves are labeled with corresponding z values. What are the signs of f_x and f_y at the points P, Q, R , and S ?

