Example 1. If \( f(x, y) = x^3 + x^2 \sin y - x e^y \), find \( f_x(1, 2) \) and \( f_y(1, 2) \).

Example 2. If \( f(x, y) = \sqrt{x^2 + y^2} \), find \( f_x(x, y) \) and \( f_y(x, y) \).

Example 3. If \( z = f(x, y) \) is defined implicitly as
\[
x^3 + y^3 + z^3 + 2xyz = 3,
\]
find \( \frac{\partial f}{\partial x} \) and \( \frac{\partial f}{\partial y} \).

Example 4. Find the second partial derivatives of \( f(x, y) = x^2 + xy^3 + \sin(xy) \).