MATH 147 Review: Partial Derivatives

Facts to Know

Notation

$$f_x(x, y) = f_x = \frac{\partial f}{\partial x} = \frac{\partial}{\partial x} f(x, y) = \frac{\partial z}{\partial x} = f_1 = D_1 f = D_x f$$
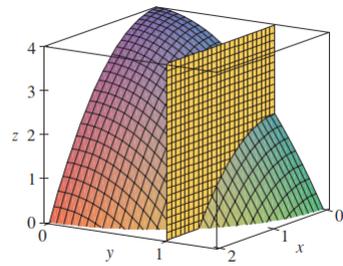
$$f_y(x, y) = f_y = \frac{\partial f}{\partial y} = \frac{\partial}{\partial y} f(x, y) = \frac{\partial z}{\partial y} = f_2 = D_2 f = D_y f$$

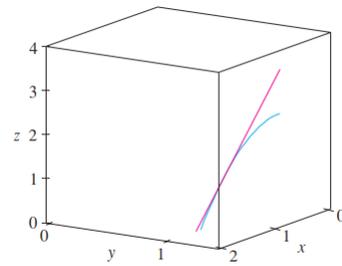Rule for finding partial derivatives of $z = f(x, y)$

Examples

1. Let $f(x, y) = x^3 + x^2 y^3 - 2y^2$. Find f_x and f_y and f_{xy} and f_{yx}.

2. Let $f(x, y) = 4 - x^2 - 2y^2$. Find $f_x(1, 1)$ and $f_y(1, 1)$.

(a)

(b)