

Chapter 13 Partial Derivatives

13.1 Functions of Two or More Variables

Let $z = f(x, y)$ for (x, y) in the **domain** D . The set the of values that $f(x, y)$ takes on is called **range**.

Example: Find the domain of the following functions and evaluate $f(2, 1)$.

a) $f(x, y) = \frac{\sqrt{x + y + 1}}{x - 1}$

b) $f(x, y) = \sqrt{9 - x^2 - y^2}$.

The graph of $f(x, y)$ is a 2-dimensional surface in 3d-space. Normally it is not easy to draw these surfaces. We can draw only for some simple surfaces.

Example: Sketch the graph of the function in part (b) and find its range.