

Lecture 9 Worksheet

June 1, 2021

1. Determine the domain and range of $f(x, y) = \sqrt{x} + \sqrt{y}$.
2. Find the domain and range and describe the level curves for the function $f(x, y) = \frac{y}{x^2 + 1}$.
3. Find the domain and range and describe the level curves for the function $f(x, y) = \sqrt{100 - x^2 - y^2}$.
4. Find the domain and range and describe the level curves for the function $f(x, y) = \frac{1}{5x^2 + 7y^2}$.
5. What are the level surfaces of $f(x, y, z) = x + 3y + 5z$?
6. What are the level surfaces of $f(x, y, z) = x^2 + 2y^2 + 5z^2$?
7. What are the level surfaces of $f(x, y, z) = y^2 + z^2$?