

14.1 Group work

14.1: Functions of multiple variables

1. Find and sketch the domain of $f(x, y) = \frac{\sqrt{9 - x^2 - y^2}}{\sqrt{x^2 + y^2 - 4}}$

2. Let $f(x, y) = \sqrt{x^2 + y^2}$.
 - (a) What is the domain of $f(x, y)$?

 - (b) Sketch a contour plot for $f(x, y)$ using level curves $f(x, y) = k$ for $k = 0, 1, 2, 3, 4, 5$.

 - (c) Use the above to sketch $f(x, y)$. Illustrate the curves corresponding to curves drawn in the contour plot above.