

MATH 243: SECTION 14.1 GROUPWORK

- (1) Find and sketch the domain of the function $f(x, y) = \ln(xy) + \frac{1}{x-y}$.
- (2) Consider the two functions $f(x, y) = \sqrt{x^2 + y^2}$ and $g(x, y) = x^2 + y^2$. Sketch the level curves for $z = 0, 1, 2, 3, 4$ for both of these functions.
- (3) Consider the function $f(x, y, z) = 2 + \sqrt{9 - x^2 - y^2 - z^2}$. Evaluate $f(1, 1, 1)$. Determine the domain and f and describe it geometrically.