McMaster University
Math 1LT3E

ASSIGNMENT 4

Sections 1 and 2 in the Red Module

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1. Consider the function $f(x, y) = \dfrac{e^x}{y}$.

(a) Find and sketch the domain of f.

(b) Determine the range of f.

(c) Sketch a contour map of f. Include at least 5 level curves.

(d) Treat y as a parameter and sketch a graph in two-dimensions to illustrate how f depends on x. (Consider the case when $y < 0$ and then when $y > 0$.)

(e) Treat x as a parameter and sketch a graph in two-dimensions to illustrate how f depends on y.

2. Find and sketch the domain of the following functions.

(a) $f(x, y) = \ln(1 + x - y)$

(b) $g(x, y) = \dfrac{3x + 1}{xy^2 - x}$

3. Let $f(x, y) = \sqrt{4 - x^2 - y^2}$.

(a) Find and sketch the domain.

(b) Determine the range.

(c) Create a contour map for the function.

(d) Sketch the graph of the function.

4. Let $g(x, y) = 8 + x^2 + y^2$.

(a) Find and sketch the domain.

(b) Determine the range.

(c) Create a contour map for the function.

(d) Sketch the graph of the function.

THE END