Graded by: _____ Score: _____ ID: _____

WORKSHEET 4 - DUE 9/28

MATH 2110Q – Fall 2015
Professor Hohn

You must show all of your work to receive full credit!

1. Find the domain of
$$f(x, y) = \sqrt{x^2 - y^2}.$$
Recall that when we say "find the domain", we mean "find the region such that the function makes sense." Use set notation.

2. Let $g(x, y, z) = x^3y^2z\sqrt{10 - x - y - z}$.

(a) Evaluate $g(1, 2, 3)$.

(b) Find and describe the domain of g. Use set notation.

3. Let $f(x, y) = 9x^2 + 9y^2$.

   (a) Sketch a contour map (graph of level curves) of f. Pick at least three k values for your contour map (e.g. $k = 36, 81, 144$).

   (b) Sketch the graph of the function f.

4. (a) Let $f(y) = x^4y^3 + 8x^2y$. Find the derivative of f with respect to y.

(b) Let $g(t) = \sqrt{x}\ln t$. Find the derivative of g with respect to t.

(c) Let $h(x) = \dfrac{x}{x+y}$. Find the derivative of h with respect to x.

(d) Let $w(z) = ze^{xyz}$. Find the derivative of w with respect to z.