# Calculus II

## Assignment 3

20180622

Name : _____

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1. Make a rough sketch of level curves (i.e. contour map) for the function whose graph is shown as Figure 1.
2. Determine the set of points at which the function is continuous.
   $f(x, y) = \ln(x^2 + y^2 - 4)$
3. Find the first partial derivatives of the function.
   (a) $f(x, y) = y^5 - 3xy$
   (b) $f(x, y) = x^y$
4. Let $f(x, y) = \sqrt[3]{x^3 + y^3}$. Find $f_x(0, 0)$.
   (1)Use the definition of partial derivative as limits. (2)Use $g(x) = f(x, 0)$.
5. Find the indicated partial derivative.
   $f(x, y, z) = \sqrt{\sin^2 x + \sin^2 y + \sin^2 z}$; $f_z(0, 0, \frac{\pi}{4})$

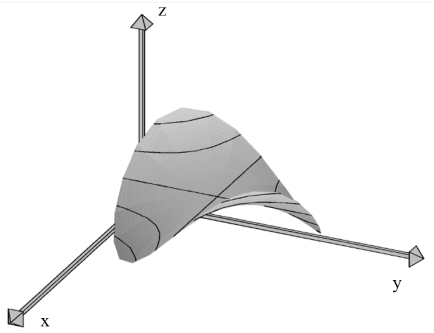


FIGURE 1 – Make a rough sketch of level curves. (Credit : University of Glasgow)

6. Find all the second partial derivatives.
   $f(x, y) = x^3y^5 + 2x^4y$

Reading materials : Textbook Section 15.1∼15.3, 2.2, 3.1