Lecture Questions II: 110.202 Calculus III

Professor Richard Brown

Mathematics Department

October 16, 2019

Richard Brown (Mathematics Department) Lecture Questions II: 110.202 Calculus III

Here are two statements:

- The graph of a function of two variables can be written as a level set of a function of three variables.
- A level set of a function of three variables can be written as the graph of a function two variables.

Which of the following is true:

- Both are true.
- (1) is true and (2) is false.
- (1) is false and (2) is true.
- Both are false.

A level set of f(x, y, z)...

- Must be a surface.
- can be either empty or a surface.
- G can be either a point or points or a surface.
- or a surface.
- G can be any combination of points, curves and/or surfaces.

Let $f : \mathbb{R}^n \to \mathbb{R}$ be differentiable. Here are two statements:

If has a local extremum at a point $\mathbf{a} = (a_1, \ldots, a_n)$.

- $\bigcirc (1) \Longrightarrow (2)$
- (1) ⇐ (2)
- $\bigcirc (1) \Longleftrightarrow (2)$
- None of the above.

The Lagrange Multiplier Method is a technique used to find extreme points of a function constrained by

- one or more strict inequalities.
- one or more equations.
- one or more other functions.
- a mix of functions and equations.
- something different from the first four answers.