Lecture on Jul. 10th, 2017: Applications of Partial Derivatives: Optimization II

1 Lagrange Multipliers

- Definition of the form of Maxima-Minima Problem for functions of three variables.
- Procedure of method of Lagrange Multipliers for functions of three variables.
- Example: Minimize $w = f(x, y, z) = xyz$, subject to $g(x, y, z) = xy + 2xz + 3yz - 162 = 0$.

2 Method of Least Squares

- Definition of Linear Regression.
- Theorem for solving linear regression line parameters.
- Example: Fitting data points: (1 ,2), (2, 3), (3, y). How will slope change when $y = 4$, $y > 4$, and $y < 4$.

3 Practice

- $f(x, y) = \frac{3 \ln x}{y}$, evaluate f_{xx}.
- Graphing $z = f(x, y) = \sqrt{36 - x^2 - y^2}$.