

Homework 09

1. Section 14.8: Problems 1, 23, 27, 37, 39. Do all these problems by method of Lagrange Multipliers.
2. Section 14.9: Problems 7, 9, 11.
3. Section 14.9: Taylor's formula for functions of 2 variables can be summarized as

$$f(x_0 + \Delta x, y_0 + \Delta y) = f(x_0, y_0) + \sum_{k=1}^n \frac{1}{k!} (\Delta x \partial_x + \Delta y \partial_y)^k f(x_0, y_0) \\ + \frac{1}{(n+1)!} (\Delta x \partial_x + \Delta y \partial_y)^{n+1} f(x_0 + c\Delta x, y_0 + c\Delta y), \quad 0 < c < 1.$$

Derive a similar formula for functions of 3 variables.