

- I. Partial derivatives
 - A) Graphically
 - B) Numerically
 - C) Symbolically
 - D) Interpret
 - E) Tangent Planes
 - F) Differentials/ Local Linearity
- II. Gradient and Directional Derivatives in 2 and 3 space
 - A) Graphically
 - B) Numerically
 - C) Symbolically
 - D) Interpret
 - E) Properties of the Gradient
- III. Chain Rule
 - A) Write tree diagrams
 - B) Write and Apply the Chain Rule
 - C) Applications using the Chain Rule (extra Problems)
- IV. 2nd Order Partial derivatives
 - A) Calculate Symbolically
 - B) Concavity
- V. Optimization
 - A) Local Max/Min/Saddle Points
 - B) Applications

Suggested problems for review:

Review Chapter 14 pg 822 – 826:

1,2,3,4,5,7,9,11,13,15,[23*](#),25,26,29,33,35,41,43,45,49,[51*](#),57,59,[65*](#),[66*](#),67ab,[75*ab](#),83,[85*](#),[87*](#),89,99,[100*](#),[105*](#),[108*abc](#)

Review Chapter 15 pg 860 : 1,3

Sec 15.2 15

Sec 15.1: 21,25,33

Note: This list assumes you've already completed the homework assignments given in class.

Extra Problem:

The temperature at points (x,y) on a rectangular plate is given by

$$T(x,y) = 96 - 5x^2 - 3y^2 - 3xy + 34x.$$

Find the coordinates of the hottest point on the plate. Use the 2nd derivative test to verify your answer.

ANS: (4,-2,164)

[Video Solution](#)