Final Study Guide and Review Plan

1. (Difference Equations; Notes on the web; Problems on these notes)
   - Solution of Difference Equations of first Order: Polynomial Form and Proportional Form.
   - Solution of Difference Equations of Second Order: Equations of the Form $F(t+2) + kF(t+1) + hF(t) = 0$.
   - Systems of Difference Equations: Passage from Difference Form to Iteration Form and viceversa; Calculation of the solution by direct iteration method.

2. (H-B Chapter 7 Section 1, Problems 16, 22) Basic Concepts for functions of two variables
   - Evaluation of the Domain of a given function
   - Sketch of the level curves of a given function.

3. (H-B Chapter 7 Section 2, Problem 25) Partial Derivatives
   - First Order Partial Derivatives
   - Second Order Partial Derivatives

4. (H-B Chapter 7 Section 3, Problem 13) Optimization Problems
   - Evaluation and Classification of Critical Points (Second Partial Test)
   - Minimization and Maximization of Functions.

5. (H-B Chapter 7 Section 3 Problem 39) Least Squares method
   - Evaluation of the line that best fits given data (By Formula or by solving the associated optimization problem)

6. (H-B Chapter 7 Section 5 Problem 18) Double Integrals Over Rectangular Regions
   - Evaluation of Double Integrals
   - Evaluation of Volumes
   - Evaluation of the Average of a function.

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