

## Study Guide for the Final

**Time: 6/25(M), 3:10-5:00; Place: 數學系 3173, 3174 (1F)**

Guidelines for preparing the final

1. Study **Quiz 6 - Quiz 11** first. If you have trouble in some specific problems, go study corresponding sections.
2. Sections covered in the Final
  - Sec. 8.3: The dot product; Projections.  
Examples: 1-5. Practice Problems: 1, 7, 11, 17, 21.
  - Sec. 8.4: The cross product; Projections.  
Examples: 3. Practice Problems: 3, 9.
  - Sec. 8.5: Parametric equations and symmetric equations of a line.  
Examples: 1, 2. Practice Problems: 1.
  - Sec. 9.2: The calculus (limit, differentiation, integration) of vector-valued functions.  
Examples: 1-8. Practice Problems: 1, 7, 13, 23.
  - Sec. 9.5: Find the tangent vectors of a vector function.  
Examples: 1. Practice Problems: 1.
  - Sec. 10.2: Definition of the limit and continuity of functions of several variables.  
Examples: 2-8. Practice Problems: 1, 7, 23, 27, 47.
  - Sec. 10.3: Calculate the partial derivatives of a function.  
Examples: 1, 2, 4-6. Practice Problems: 1, 9, 57, 59, 61.
  - Sec. 10.4: Find the tangent plane and linear approximation of a function.  
Examples: 1-3, 5. Practice Problems: 1, 7.
  - Sec. 10.5: Chain Rule.  
Examples: 1-4. Practice Problems: 5, 17, 19.
  - Sec. 10.6: Definition of the gradient. Directional derivatives.  
Examples: 2-4, 6, 7. Practice Problems: 1, 3, 11, 17, 41.
  - Sec. 10.7: Find the critical points and extrema of functions of several variables.  
Examples: 2, 3, 4, 6. Practice Problems: 1, 7, 33.
  - Sec. 10.8: Use Lagrange Multipliers to solve the constrained optimization problems.  
Examples: 2, 3, 4. Practice Problems: 1, 9, 17, 37.
  - Sec. 11.1: Set up the double integrals; Switch the order of integration  
Examples: 2, 3, 4, 5, 7. Practice Problems: 9, 11, 15, 19, 43, 49.
  - Sec. 11.2: Area; Volume  
Examples: 1, 2. Practice Problems: 1, 7, 11.
  - Sec. 11.5: Triple Integrals.  
Examples: 1, 2, 4. Practice Problems: 1, 5, 17.
  - Sec. 11.8: Change of Variables; Jacobian.  
Examples: 1, 4, 5. Practice Problems: 1, 13, 23.