

Brief review

Basic geometry : vectors, lines, planes,
curves (tangent vectors, arc-length),
open set, closed set,
interior, exterior, boundary

Limit : Definition, Squeeze Thm, Continuity

mid-term

Partial derivative : 1st and higher order,
Clairaut's Thm (Mixed derivatives thm)
 C^k -functions

Differentiability : Linearization, gradient,
directional derivative, total differential

Chain Rule : Jacobian Matrix, normal vector to level set,
Implicit differentiation

Extremum : global max/min on closed & bounded set,
critical points

Taylor's expansion : 2nd derivative test,
Classification of local extremum

Lagrange Multiplier: Constrained problem, Quadratic constraints

Implicit Function Theorem & Inverse Function Theorem

Final Exam Dec 19 (Tue) 9:30-11:30 UC Gym

- Coverage:
- All material in lecture notes, tutorial notes, textbook (Ch 14 & necessary parts of Ch. 11-13) & homework assignments,
 - except Implicit Function Thm & Inverse Function Thm (but implicit differentiation is included as application of Chain rules),
 - emphasis on those material not included in Midterm.
 - 6 questions, answer all. Some are unfamiliar/difficult questions as required by the grade descriptor of A range,

(Note: Textbook & assignments contain only basic theory and basic questions.
Past papers may be useful for those material not included in the Textbook.

(End)