FINAL EXAM REVIEW SESSION 1

The format of this exam will be 8 page-length (multi-part) problems, of which you will have to choose 4 (and do everything on the page). Remember to complete the survey before the exam for 5% extra credit.

Obviously such an exam can't cover everything in the course. Below are some topics you might expect to see represented. Since they have not yet been examined, the last three bullets will receive particular emphasis (at least 50% of the exam).

- Integration
  - definite integral/integrability, definition via step functions
  - methods: substitution, integration by parts, partial fractions
  - applications: areas and volumes, average value, log, Taylor remainder
- Differentiation
  - limits, continuity, definition of derivative
  - fundamental theorem of calculus (indefinite integral = antiderivative)
  - applications: max/min problems, Taylor polynomials, L'Hopital
- Sequences and series
  - computation of limits and sums (e.g. geometric/telescoping series)
  - convergence tests: root, ratio, comparison, alternating, integral
  - function series, esp. power series, radius of convergence
- Euclidean spaces
  - dot product, cross product, scalar triple-product
  - distances, e.g. point-to-plane
  - angles, e.g. between two planes
- Vector calculus
  - curvilinear motion and tangent lines
  - rectifiable curves and arclength
  - curvature and osculating circles
- Vector and inner-product spaces
  - linear independence and span
  - linear transformations, kernel/1-to-1, image/onto, rank+nullity
  - inner products, Gram-Schmidt, and projection

In particular, I have omitted differential equations and complex numbers from this list. We'll revisit both next semester, but you can forget about them for the purpose of studying for this exam.

See the problem sheet on Canvas for practice. We worked some additional problems in class.