Exam 3 Information

You are encouraged to double check this document to make sure that I didn't leave anything off.

- Review of Polar Coordinates.

  you should be able to convert to polar

  you should be able to graph curves in polar

- **Section 15.1**

  know the notation for a rectangular region. $R = [a, b] \times [c, d]$

  the $\iint_R f(x, y)\ dA$ represents volume when $z = f(x, y) \geq 0$

  iterated integrals

  Fubini's Thrm for double integrals.

- **Section 15.2**

  Be able to setup non rectangular regions set up with different methods

  $dA = dxdy$

  $dA = dydx$

  change the limits of integration by looking at region D.

  $\iint_R 1dA$ can be interpreted as the area of region D.

- **Section 15.3**

  be able to graph basic polar graphs

  converting an integral from Cartesian to polar

  non-rectangular regions in polar

  know when to convert a Cartesian integral to a polar integral.

- **Section 15.4**

  total mass of a plate with region D is the double integral of the density function over the region D.

  should be familiar with the formulas for moment and center of mass.

- **Section 15.5**

  compute the surface area of a function of the form $z = f(x, y)$ over a region.

- **Section 15.6**

  setup a triple integral that is projected on any of the coordinate planes.

  be able to change the order of integration for a triple integral

  understand the idea of doing the inside interated integral and then converting the remaining double integral to polar.

  applications of a triple integral: mass, moments,...

- **Section 15.7**

  express a Cartesian point or equation in the cylindrical system.

  Triple integrals in cylindrical.

- **Section 15.8**

  express a Cartesian point or equation in the spherical system.

  Triple integrals in spherical.

  converting a Cartesian integral to a spherical integral.

- **Section 15.8**

  finding an image of a transformation

  Compute the Jacobian for a transformation

  convert a given integral with region to a new integral given the transformation.

  Jacobian for a triple integral.

Any additional topic/information covered in these sections.