Math 324 Exam 1 Checklist

1. **15.1, 15.2, 15.3, 15.4: Double Integrals and Computation**

   - Do you know what a double integral is?
   - Computing a double integral given the bounds outright. (HW 1/1-3)
   - Computing a double integral given a description of the bounds. (HW 1/5,6)
   - Computing a volume with a double integral when given a verbal description. (HW 1/6,7-9,15)
   - Setting up the integral in both possible ordering $dydx$ and $dxdy$. (HW 1/10,11)
   - Setting up a double integral in polar coordinates. (HW 1/12-15)

2. **15.6: Triple Integrals**

   - Can you set up a triple integral and decide between the 6 possible orderings? (HW 2/6-14)

3. **15.5/15.6: Double and Triple Integral Applications**

   - Finding area, volume and average value. (Various problems throughout).
   - Finding total charge from charge density. (HW 2/1)
   - Finding total mass and center of mass. (HW 2/2-4,12, HW 3/6)
   - Finding moments of inertia. (HW 2/5)

4. **15.7/15.8: Cylindrical and Spherical Coordinates**

   - Know basic shapes in both systems. (HW 3/1-3,9-11)
   - Evaluate a triple integral using cylindrical coordinates. (HW 3/4-7)
   - Evaluate a triple integral using spherical coordinates. (HW 3/8,12-14)

5. **15.9: Change of Variable**

   - Computing the Jacobian. (HW 3/15,16)
   - Sketching the image of a region under a given transformation. (HW 3/17,18)
   - Setting up the new integal in terms of the change of variable. (HW 3/17,18)