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 15.2)
   - Computing a double integral given a description of the bounds. (HW 15.3)
   - Computing a volume with a double integral when given a verbal description. (HW 15.2,3,4)
   - Setting up the integral in both possible ordering $dydx$ and $dxdy$. (HW 15.3)
   - Setting up a double integral in polar coordinates. (HW 15.4)

2. **15.5/15.6/15.7: Double and Triple Integral Applications**

   - Finding area, volume and average value. (Various problems throughout).
   - Finding total charge from charge density. (HW 15.5)
   - Finding total mass and center of mass. (HW 15.5,15.7)
   - Finding moments of inertia. (HW 15.5)
   - Finding surface area. (HW 15.6)

3. **15.7: Triple Integrals**

   - Can you set up a triple integral and decide between the 6 possible orderings? (HW 15.7)

4. **15.8/15.9: Cylindrical and Spherical Coordinates**

   - Know basic shapes in both systems. (HW 15.8,15.9)
   - Evaluate a triple integral using cylindrical coordinates. (HW 15.8)
   - Evaluate a triple integral using spherical coordinates. (HW 15.9)

5. **15.10: Change of Variable**

   - Computing the Jacobian. (HW 15.10)
   - Sketching the image of a region under a given transformation. (HW 15.10)
   - Setting up the new integal in terms of the change of variable. (HW 15.10)