**Be Able To:**

- ❖ Represent a graphed piecewise function as a equation with Heaviside functions
- ❖ Use the Laplace Transform Table to transform and invert transforms
- ❖ Laplace Transform special functions like heaviside and the delta function
- ❖ Laplace Transform a differential equation with initial conditions and then solve it by inverting
- ❖ Use Convolution to invert a transform
- ❖ Use a Power Series ansatz to solve a variable coefficient differential equation
- ❖ Locate Singular Points
- ❖ Solve the indicial equation to choose the forms of solutions to variable coefficient differential equations via Frobenius Method
- ❖ Using a given variable transform, change a differential equation such that it is either a Bessel Equation or a Legendre Equation
- ❖ Provide the solution to a Bessel Equation or a Legendre Equation.
- ❖ Know where Bessel Equation and Legendre Equations are applicable

**About the Test:**

- ● It will be on gradescope

- ● Covers sections 6.1-6.7 and  5.1-5.4

- ● You will have the full class time

- ● You may use your textbook, notes, a calculator, the class website, and your homework for this test. No internet/website resources allowed besides the class website

- ● You will need to have your webcam on for proctoring

- ● Illegible answers will not receive credit.

- ● Answers without work and justification will not receive credit

- ● Only work written on the exam sheet will be graded. If you use a scratch sheet, make sure your complete answer is copied onto the exam sheet.

- ● On problems with multiple parts, clearly separate your work and mark each part

- ● Remember that you are showing me what you know!  Focus on showing your thought process and be explicit in your methods

- ● You will need to copy the honor code on the first page of your test and sign it