

Week 15

Graded Materials:

- **Thursday (11:59pm)**
 - Module 17 Exercises.
- **Friday (11:59pm)**
 - Homework WEEK 15.
- **Final Exam Review (last updated: 12/9)**
 - Final Exam material: You will be expected to
 - Differentiate and label different 'types' of 1st-order differential equations. These include:
 - Separable,
 - 1st-order Linear,
 - Exact, and
 - 1st-order Homogeneous.
 - Solve different 'types' of 1st-order differential equations.
 - Understand solutions, verifying solutions, and domains of solutions.
 - Determine whether given differential equations are
 - linear,
 - linear with constant coefficients, or
 - Cauchy-Euler equations.
 - Solve homogeneous linear differential equations.
 - Solve nonhomogeneous linear differential equations using both
 - the method of undetermined coefficients, and
 - the method of variation of parameters.
 - Solve homogeneous and nonhomogeneous linear differential equations without being told what method to use.
 - Determine whether a set of functions form a fundamental set of solutions for a homogeneous linear differential equation or not.
 - Be able to answer questions surrounding the forms of general solutions for homogeneous and nonhomogeneous linear differential equations.
 - Be able to compute the Laplace transform of a function using its derivative.
 - Be able to compute the Laplace transform of a function using the table of information and linearity.
 - Be able to compute the inverse Laplace transform of a function using the table of information and linearity.
 - Be able to compute the Laplace transform of derivatives of a function.
 - Be able to solve a linear IVP using the Laplace transform and understand the process surrounding this.
 - Be able to compute the Laplace transform and the inverse Laplace transform for functions 'shifted' by an exponential term.
 - Please see the "Expectation Checklist" for Modules 1-16.
 - Solve problems similar to those seen in previous quiz topics, homeworks, and module exercises.

Material to Master:

- Modules 1-16 are on the Final Exam.
- Module 17 is not on the Final Exam, but the WeBWork for it are required.