Chapter Review Sheets for
Elementary Differential Equations and Boundary Value Problems, 8e

Chapter 1: Introduction

Definitions:

- Differential Equation Mathematical Model
- Direction (Slope) Field Equilibrium Solution
- Rate (growth) constant
- Initial Condition, Initial Value Problem (IVP)
- General Solution, Integral curves
- Ordinary Differential Equation (ODE), Partial Differential Equation (PDE)
- Systems of Differential Equations
- Order, Linear, Nonlinear, Linearization

Important Skills:

- Derive differential equations that mathematically model simple problems. (Example 1, p. 2; Also see p.7)
- Construct a direction field for a first order ODE, and sketch approximate solutions. (Example 2, p.3)
- Graph the integral curves of a general solution (Example 2, p.13)
- Know what an initial value problem is, and how to show a given function is a solution to one. (Example 2, p.13)
- Know the difference between an ordinary differential equation and partial differential equation. (p. 19)
- Derivation of pendulum differential equation (p.21)
- Know how to classify differential equations as order, and linearity. (p.19-20)