

Project 1: Sky Diving

AVAILABLE: [Day 5] DUE: [Day 8]

Exercise 5 from Section 5.1 begins, “Pilots and parachutists know (and physicists confirm) that the Velocity-Squared Model applies to the resisting force of air on an airplane wing or a falling human body, with or without a parachute.” Project 1, given at the end of Chapter 6, leads you through a step-by-step process to solve the differential equation which appears in Exercise 5, Section 5.1. This is a challenging problem that builds on the Velocity-Squared Model. Review the set up for the velocity-squared model in Section 5.1 and study Section 6.3 very carefully to learn a method that can be used to solve this differential equation.

- Find Project 1: *Sky Diving* at the end of Chapter 6. You are encouraged to discuss this problem with each other, and there will be some time in class on Monday February 1 for you to work together on this problem. Each of you is to write up the solution for this project individually. Because there is a lot of mathematical notation involved in this problem, you may write this project up by hand. (Be sure that you write neatly enough that I can easily read your solution!)
- This project is due at the beginning of class on [Day 8].

Grading Criteria:

- **Format: X / 10**
Does your paper give a good professional first impression? Even though this project may be written by hand, it should still be neat and give a good professional first impression.
- **Writing Style: X / 15**
Present your work carefully so that I can see how you arrived at your answers. Write a few words in English to explain how you are setting up and solving the problem. Think of yourself as presenting this solution to your supervisor in a work setting, or to a prospective employer at a job interview.
- **Mathematical Content and Correctness: X / 60**
 - Do you answer each of the four questions?
 - Is your work for each of these problems mathematically correct?
- **Synthesis and Integration: X / 15**
 - Does your paper give evidence that you understand the process of solving differential equations of this type?
 - Do your answers to the questions posed by the project should demonstrate that you are making connections between the mathematical strategies you are learning in this class and the real-world context of this problem?

Late penalty (if necessary): -5 points for each day the project is late

Total: X%