

## Relevant Reading

- [Flight Vehicle Design Book](#)
  - Chapter 4: Wing Design (7 pages)
- [Computational Aeronautics](#)
  - Chapter 4: Finite Wing (33 pages)

## Problem 1 Vocabulary

Explain the following terms; making sure to use sufficient detail, including any math or helpful figures. In some cases, these terms are simple one sentence definitions, in others, you should include several paragraphs to explain them fully.

### Non-dimensional Numbers

- Reynolds Number
- Mach Number
- Coefficients
  - Lift Coefficient
  - Drag Coefficient
  - Moment Coefficient

### Airframe Analysis

- Vortex Lattice Method
- Strip Theory
- Critical Section Theory

### Airframe Performance

- Lift Distribution
- Stall Speed

## Problem 2 Exploration

Complete the following exploration.

### 2.a Prerequisites

- Obtain, and become familiar with, the following tools auxiliary to VortexLattice.jl including:
  - The critical section theory code
  - The wing efficiency code

### 2.b Lift Distributions and Wing Efficiency

- Create a plot comparing the lift distributions of a constant chord, tapered chord, and elliptic wing with no twist and with the same wing area. Also plot the ideal elliptic distribution for comparison.
- Discuss the differences you see in your plot. Which planform design is the most efficient? Why?