



1. (10 points) **Problem 2.4.** You must write a code and compare with **NDSolve** or **NDSolveValue** for uphill and downhill motions.
2. Write a computer program to reproduce Fig. 2.7 for the cases
 - (a) (3 points) no wind
 - (b) (3 points) headwind
 - (c) (2 points) tailwind.
 - (d) (2 points) Compare using **NDSolve** or **NDSolveValue**.
3. **Problem 2.7.** Write a code for
 - (a) (4 points) isothermal model to reproduce Fig. 2.5.
 - (b) (3 points) adiabatic model to compare with the isothermal model.
 - (c) (3 points) Take $\theta = \pi/4$, study the temperature effect for $T = 250, 275, 300$ and 325 K.

Compare using **NDSolve** or **NDSolveValue** in each part.