Coding Challenge 7

Challenge Situation

You're a Boeing Engineer and your job is to model the flight profile of a tiny model 737-800 max aircraft!

Luckily due to the nature of the aircraft we can make some simplifying assumptions...

- The model aircraft is falling down vertically out of the sky.
- Assume a uniform cross section
  - We're trying to learn ode45 not how to build an accurate drag polar
- Sea Level Conditions apply

Tasks:

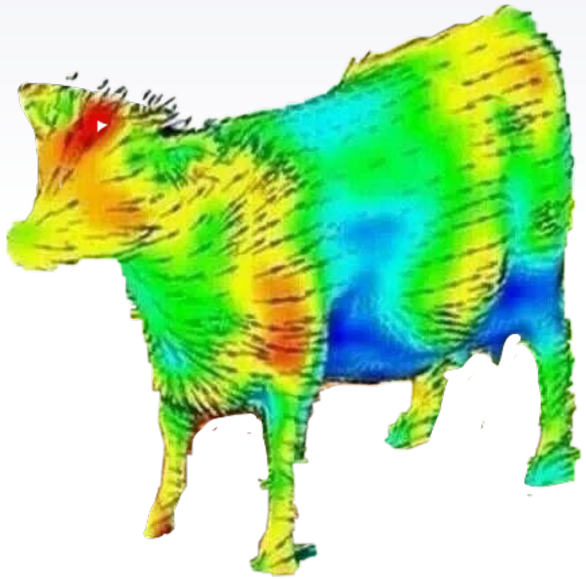
1) Set an initial condition velocity
2) Set values for constants
3) Propagate freefall w/ drag for 20 seconds
    Use ode45 matlab function
4) Plot the velocity vs. time
5) Calculate the change kinetic energy vs. time
6) Plot the change in kinetic energy vs. time

Why were using ode45 => Drag

Drag Equation:

$$D = CD * .5 (\rho * V^2) * A$$

- Drag is a function of velocity
- Velocity changes due to drag



Values You May Need:

Mass = .3 kg

$\rho = 1.225\ kg/m^3$

CD = 1.2

Cross Sectional Area = .0046 m^2

Initial Velocity = 0 m/s