September 19, 2014

AAE 421, Fall 2014

Homework Four

Due: Friday, September 26

Exercise 1 (Your first flight) Consider the model for the Cessna 182 aircraft given in the notes. Obtain a SIMULINK model of this vehicle with state variables $V, \alpha, \theta, q, p, h$ and "fly" your model to achieve the following trim conditions. (Consider $x^{cm} = 0$.)

(a) Gliding with $el = 0$.

(b) Horizontal level flight with

$$th = 100 \text{ hp}$$

In this part, you need to vary the elevator position until the desired trim condition is achieved.

Illustrate your results with plots of the time histories of V, α (deg), γ (deg), and h; also plot the aircraft trajectory, that is, h versus p.