

#### **Question 4**

Consider an airplane patterned after the A-10. The airplane has the following characteristics: wing area =  $505.6 \text{ ft}^2$ , aspect ratio = 6.5, Oswald efficiency factor = 0.87, weight = 23,105 lb, and zero lift drag coefficient = 0.032. The airplane is equipped with two jet engines with 9035 lb of static thrust *each* at sea level.

- a. Calculate and plot the power required at sea level as a function of velocity.
- b. Calculate the maximum velocity that can be achieved at sea level at maximum thrust.
- c. Calculate and plot the power required at 5 km above sea level as a function of velocity.
- d. Calculate the maximum velocity that can be achieved at 5 km above sea level at maximum thrust. (Assume that the jet engine thrust will be proportional to free-stream air density)