

AE 3310 Introduction to Aerospace Vehicle Performance**Homework #5***Due Tuesday, June 26, 2001*

1. An airplane configuration is characterized by $C_{D,0} = 0.018$, $k = 0.06$,
 $S = 1200\text{ft}^2$ and $W = 87000\text{lb}$. For steady, straight and level flight:
 - 1.1. Plot the “Thrust required” curve and its two components, both at sea level and at 30,000 ft.
 - 1.2. Determine “Minimum thrust required”.
 - 1.3. Determine $V_{\left(\frac{L}{D}\right)_{\max}}$.
 - 1.4. Plot $\frac{C_L}{C_D}$, $\frac{C_L^{3/2}}{C_D}$ and $\frac{C_L^{1/2}}{C_D}$ as a function of $\frac{V_{\infty}}{V_{\left(\frac{L}{D}\right)_{\max}}}$.
 - 1.5. Determine $\left(\frac{C_L}{C_D}\right)_{\max}$, $\left(\frac{C_L^{3/2}}{C_D}\right)_{\max}$ and $\left(\frac{C_L^{1/2}}{C_D}\right)_{\max}$.

Present your results in a neat, legible, format. Indicate units.