

F5. An experimentalist determines that the downwash velocity for a rectangular wing of span b approximately obeys the relation

$$w = \frac{L}{2\rho V_\infty b^2}$$

- a) Assuming w is constant across the span, determine how C_{Di} depends on C_L for this wing.
- b) Determine the wing's $C_L(\alpha)$ relation, and compare its $dC_L/d\alpha$ to the 2-D value of 2π .
Hint: Start with the relation $C_L = 2\pi\alpha_{\text{eff}}$.