

(2)

Drag (D) ↓      ↑ V Thrust (T)

$$T - D = m \frac{dv}{dt}$$

$$b \frac{dv}{dt} - C_d V^2 = m \frac{dv}{dt}$$

$$(b - m) \frac{dv}{dt} = C_d V^2$$

$$\frac{(b - m)}{C_d} \int \frac{dv}{v^2} = \int dt$$

$$-\frac{1}{v} = \frac{C_d}{b - m} t + C$$

$$v = - \frac{(b - m)}{C_d} \cdot \frac{1}{t} + C$$

$$\frac{dy}{dt} = - \left( \frac{b - m}{C_d} \right) \frac{1}{t} + C$$

$$\int dy = \left( \frac{m - b}{C_d} \right) \int \frac{dt}{t} + \int C dt$$

$$y = \frac{(m - b)}{C_d} \log t + Ct$$