

Mac-Etel: Colder
Mechanics
16/ENG05/021
Assignment 1

$$F_D = \frac{0.3V^2}{500 + (\ln V)^3} - 0.02V$$

$$m = 3.5 \text{ kg} \quad g = 9.8 \text{ m/s}^2$$

$$F_D = mg = 3.5 \times 9.8 = 34.3 \text{ N}$$

$$34.3 = \frac{0.3V^2}{500 + (\ln V)^3} - 0.02V$$

hence

$$34.3 = \frac{0.3V^2}{500 + (\ln V)^3} - 0.02V$$

$$34.3 = \frac{0.3V^2}{500 + (\ln V)^3} - \frac{0.02V(500 + (\ln V)^3)}{500 + (\ln V)^3}$$

$$34.3 = \frac{0.3V^2}{500 + (\ln V)^3} - \frac{10V - 0.02V(\ln V)^3}{500 + (\ln V)^3}$$

$$34.3(500 + (\ln V)^3) = 0.3V^2 - (10V + 0.02V(\ln V)^3)$$

$$17150 + 34(\ln V)^3 + 10V + 0.02V(\ln V)^3 = 0.3V^2$$

$$V = ((17150 + 34(\ln V)^3 + 10V + 0.02V(\ln V)^3) = 0.3V^{1/2}$$

$$V_{it+1} = [([17150 + 34(\ln V(i))]^3 + 10V(i) + 0.02V(i)[\ln(V(i))]^3)] = 0.3V^{1/2}$$