Assignment 1

Iqwe Raphael
16/ENG04/025
ENG 382
Electrical Engineering

$$FD = \frac{0.3v^2}{500t(\ln v)^3} - 0.02v$$

$\sum FD = mg$, $m = 3.5\,kg$ $\quad g = 9.8\,m/s^2$

$fD = 3.5 \times 9.8 = 34.3N$

hence

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

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

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

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

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

$$v_{i+1} = \sqrt{\frac{17150 + 34(\ln v(i))^3 + 10v(i) + 0.02v(i)[\ln v(i)]^3}{0.3}}$$