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16/ENG04/048
Elect/Elect
ENG 382

Assignment 1

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

$F_D = mg$ $\quad g = 9.8 m/s$

$F_D = 3.5 \times 9.8 = 34.3$

hence

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

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

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

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

$$17150 + 34(\ln v)^3 + 10v + 0.02v(\ln v)^3 = 0.$$

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

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

$$\div 0.3]^{1/2}$$

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