

NELSON-UDU .A. ELAH

16/ENG07016

PETROLEUM ENGINEERING

ENG 382

ASSIGNMENT 1

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$$V = 0.5 \text{ m/s} \quad g = 9.8$$
$$F_D = mS$$
$$F_D = 3.3 \times 9.8$$
$$= 34.3$$
$$F_D = \frac{0.3 V^2}{500 + (14V)^3} = 0.02V$$
$$\frac{0.3 V^2}{500 + (14V)^3} - 0.02V = 34.3 - f(v)u$$
$$\frac{0.3 V^2}{500 + (14V)^3} - 0.02V - 34.3 = 0$$
$$\frac{0.3 V^2}{500 + (14V)^3} = 34.3 + 0.02V$$
$$0.3 V^2 = (34.3 + 0.02V) \times (500 + (14V)^3)$$
$$V = \sqrt{\frac{(34.3 + 0.02V) \times (500 + (14V)^3)}{0.3}}$$
$$V_{i+1} = \sqrt{\frac{(34.3 + 0.02V_i) \times (500 + (14V_i)^3)}{0.3}}$$
$$\% \text{ abs Error} = \left[ \frac{V_{i+1} - V_i}{V_{i+1}} \right] \times 100\%$$