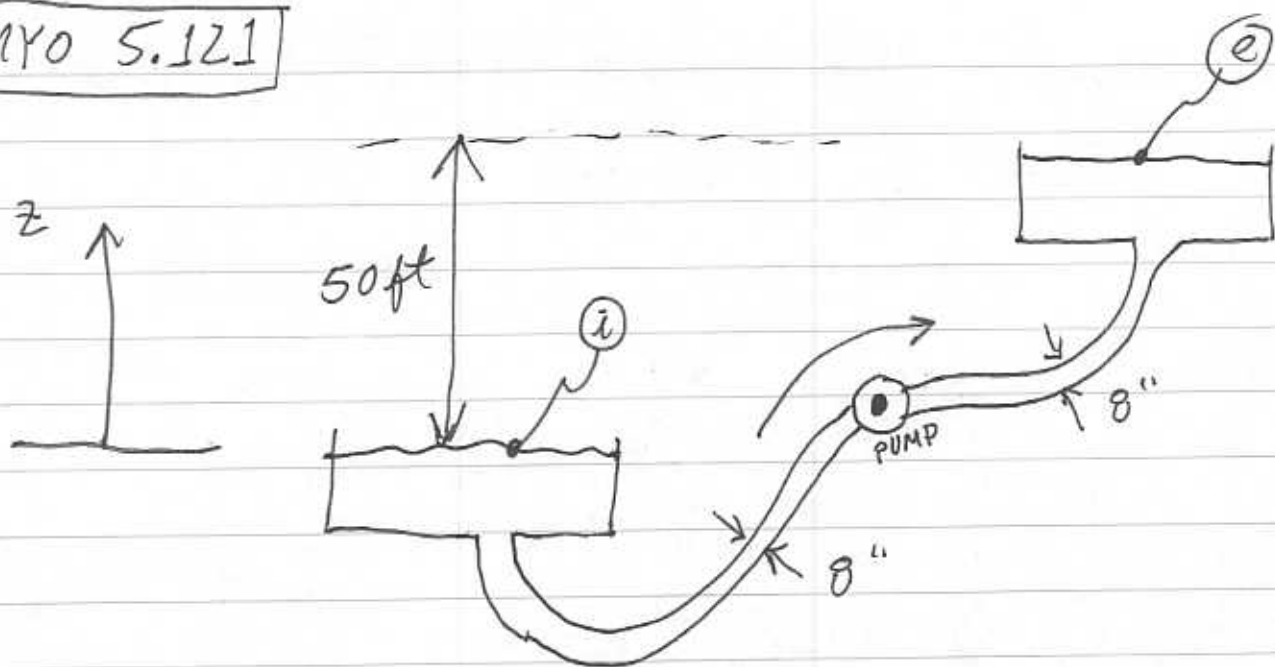


MYO 5.121



$$\dot{V} = 2.5 \text{ ft}^3/\text{s}$$

$$\text{loss} = 61 \bar{V}^2 / 2 \text{ ft}^2/\text{s}^2$$

$$\dot{V} = AV = \frac{\pi (8/12)^2}{4} V = 2.5 \text{ ft}^3/\text{s}$$

$$\bar{V} = 7.2 \text{ ft/s}$$

C.O.E. \rightarrow Modified Bernoulli

$$\frac{p_e}{\rho} + \frac{V_e^2}{2} + gze = \frac{p_i}{\rho} + \frac{V_i^2}{2} + gzi + w_s - \text{loss}$$

$$(32.2 \text{ ft/s}^2)(50 \text{ ft}) = w_s - 61 \frac{(7.2 \text{ ft/s})^2}{2}$$

$$w_s = 3191 \frac{\text{ft}^2}{\text{s}^2} = \frac{\dot{W}}{\dot{m}}$$

$$\dot{W} = \rho \dot{V} w_s = (1.94 \frac{\text{slugs}}{\text{ft}^3})(2.5 \frac{\text{ft}^3}{\text{s}})(3191 \frac{\text{ft}^2}{\text{s}^2})$$

$$\dot{W} = 15480 \frac{\text{ft} \cdot \text{lb}}{\text{s}} = 28 \text{ hp}$$