

Homework #7

4-17 :

$$Q_{in} - W_{out} = m \left(h_2 - h_1 + \frac{V_2^2}{2 \cdot g_c} - \frac{V_1^2}{2 \cdot g_c} \right)$$

$$0 - 1500 = \frac{18000}{3600} \left(h_2 - h_1 + \frac{(450)^2}{2 \cdot 1000} \right)$$

h_1 : use Table A-6-1

$$h_1 = 2746.4 \text{ kJ/kg}$$

$$h_2 = 2450 \text{ kJ/kg}$$

$$= h_f + x (h_g - h_f)$$

$$\Rightarrow x = 0.94$$

4-18 :

$$Q_{in} - W_{out} = m (h_2 - h_1)$$

$$h_1 : P = 4100 \text{ kPa.}$$

$$h_2 = m h_1 - W_{out} \quad \dots \quad (1)$$

$$h_2 : P = 3.99 \text{ kPa.}$$

$$h_2 = 2310 \text{ kJ/kg.}$$

$$\text{From (1): } h_1 = 3140 \text{ kJ/kg}$$