



a.) First Law:  $Q_H = Q_C + W_{OUT}$

$$W_{OUT} = Q_H - Q_C = \underline{15 \text{ kJ}}$$

b.)  $\eta = \frac{W_{OUT}}{Q_H} = 0.273 = 27.3\%$

or,  $\eta = 1 - \frac{Q_C}{Q_H} = 0.273 = 27.3\%$