B) 4 states:

State 1 – refrigerant leaves superheated at 2.7°C

State 2 – applying and isentropic efficiency of 80%, find state 2 on the pressure – enthalpy diagram, and then calculate the actual enthalpy at state 2.

State 3 – the refrigerant leave super cold by 6.3°C.

State 4 – refrigerant, undergoes a throttling process, so it experiences a drop in pressure with no change in enthalpy.

C) made already

D)

$$COP = \frac{Q_L}{W_{in}} = \frac{h_1 - h_4}{h_2 - h_1}$$

E) refrigerant Mass Flow: calculate this based on the cooling load in the enthalpy difference across the evaporator.

$$\dot{m} = \frac{Q_{room}}{h_1 - h_4}$$

F) first, find the work per unit mass (W) and then use the mass flow rate to find the total power required. 1KW equals 1.341 HP.

G) This is the heat rejection in the condenser, and it's the some of the heat absorbed in the evaporator and the work done by the compressor

$$\dot{Q}_H = \dot{m} \cdot (h_2 - h_3) \rightarrow$$

7) Calculations

A) assume conditioned space at 75°F equals 24°C