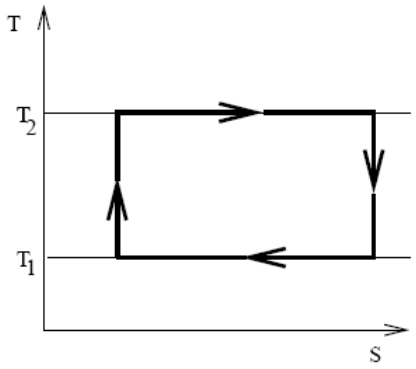
2. Consider the Carnot cycle for an ideal gas operating between temperatures T_1 and T_2.



The figure shows the cycle's entropy-temperature diagram. Show that the efficiency of the cycle is

$$\eta = 1 - \frac{T_1}{T_2}.$$

Hence estimate the maximum efficiency possible for a practical steam engine when the steam is heated to 800 K.