

For question (b) part (i),
 no graph, just one value of rp-optimum and compare with efficiency from
 part (a)
 For question (b) part (ii)

$$\begin{aligned}
 W_{net} &= W_T - W_C \\
 &= C_P(T_3 - T_4) - C_P(T_2 - T_1) \\
 &= C_P \left[T_3 \left(1 - \frac{T_4}{T_3} \right) - T_1 \left(\frac{T_2}{T_1} - 1 \right) \right] \\
 &= C_P \left[T_3 \left(1 - \left(\frac{1}{r_P} \right)^{\frac{k-1}{k}} \right) - T_1 \left(r_P^{\frac{k-1}{k}} - 1 \right) \right]
 \end{aligned}$$

Set T3 and T1 constant at 1000 K and 300 K, respectively. Play with rp.
 Cp and k depends on the gas.
 You should get something like this when you plot Wnet vs rp.

