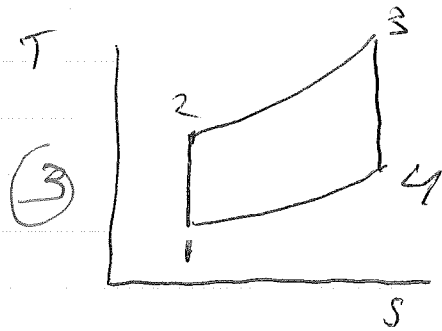
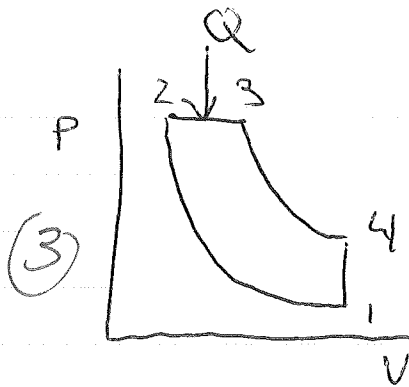


2) Diesel



b

$$V_2 = 2 \cdot 10^{-3} \text{ m}^3$$

$$V_3 = r_c V_2 = 4 \cdot 10^{-3} \text{ m}^3$$

$$V_4 = V_1 = r V_2 = 32 \cdot 10^{-3} \text{ m}^3$$

(4)

c) $P_2 V_2 = m R T_2$ $m = \frac{250 \cdot 10^5 \cdot 2 \cdot 10^{-3}}{\frac{8314}{29} \cdot 873} = 0,2 \text{ kg}$

$\Delta_{23} Q = m c_p (T_3 - T_2)$ (4)

$T_2 = 873 \text{ K}$ $T_3 = r_c T_2 = 1746 \text{ K}$

$\Delta_{23} Q = 0,2 \cdot 1 \cdot (1746 - 873) = \boxed{174,6 \text{ kJ}}$

d) $T_1 = ?$ $T_4 = ?$ $T V^{k-1} = c$ (3)

$\left(\frac{T_1}{T_2}\right) = \left(\frac{V_2}{V_1}\right)^{k-1}$ $\left(\frac{T_4}{T_3}\right) = \left(\frac{V_3}{V_4}\right)^{k-1}$ $T_2 = 2888 \text{ K}$
 $T_4 = 760 \text{ K}$

$\Delta_{41} Q = -m c_v (T_4 - T_1) = 0,2 \cdot 0,714 \cdot (760 - 2888)$
 $= \boxed{67,4 \text{ kJ}}$

e) $W = 174,6 - 67,4 = \boxed{107,2 \text{ kJ}}$ $\eta = \frac{107,2}{174,6} = 0,61$

(3)

f →

(3)

g) $W \cdot \frac{n}{60} = 1000$ $n = \frac{1000 \cdot 60}{107,2} = 560$

(4)