

Tressfysikk – Løsning oppgave 6.21

$V_1 = 1,50 \text{ [m}^3\text{]}, p_1 = 200 \text{ [kPa]}, T_1 = 20,0 + 273 = 293,0 \text{ K}$

a) Tilstandslikningen sier: $\frac{p_1 \cdot V_1}{T_1} = \frac{p_2 \cdot V_2}{T_2}$

Da $T_1 = T_2$, blir likningen $p_1 \cdot V_1 = p_2 \cdot V_2$ Da blir p_2 :

$$p_2 = p_1 \cdot \frac{V_1}{V_2} = 200 \text{ [kPa]} \cdot \frac{1,50 \text{ [m}^3\text{]}}{1,00 \text{ [m}^3\text{]}} = 300 \text{ [kPa]}$$

b) Da $T_2 = T_3$, $p_3 = 150 \text{ [kPa]}$ Da blir V_3 :

$$V_3 = V_2 \cdot \frac{p_2}{p_3} = 1,00 \text{ [m}^3\text{]} \cdot \frac{300 \text{ [kPa]}}{150 \text{ [kPa]}} = 2,00 \text{ [m}^3\text{]}$$

c) Da $p_4 = p_3$, $T_4 = 157 + 273 = 430 \text{ K}$, $T_3 = 293,0$.

Likningen blir nå:

$$\frac{V_3}{T_3} = \frac{V_4}{T_4}$$

Da blir V_4 :

$$V_4 = V_3 \cdot \frac{T_4}{T_3} = 2,00 \text{ [m}^3\text{]} \cdot \frac{430 \text{ [K]}}{293 \text{ [K]}} = 2,94 \text{ [m}^3\text{]}$$

d) For a)

