$p \cdot V = R \cdot n \cdot T$ $T = cost.$

$p \cdot V = R \cdot \frac{N}{N_A} \cdot T$ $N = N_A \cdot n$

$n = \frac{N}{N_A}$

COSTANTE DI BOLTZMANN $N_A = 1{,}38 \cdot 10^{-23}$

n° 36 p. 331

$V_i = 14 \cdot 10^3 cm^3$ $P_i = 1 atm = 10^5 Pa$

$T_i = 20°C = 293K$ $PV = nRT$

$\Delta h = 3{,}0 \cdot 10^3 m$

$\frac{PV}{T} = nR$

$P_f = 7{,}0 \cdot 10^6 Pa$

$T_f = -12°C = 261K$

$V_f = ?$

$\frac{P_i V_i}{T_i} = \frac{P_f V_f}{T_f}$

$\frac{10^5 Pa \cdot 14 \cdot 10^3 cm^3}{293K} = \frac{7{,}0 \cdot 10^6 Pa \cdot V_f}{261K}$

$V_f = 10^5 Pa \cdot 14 \cdot 10^3 cm^3 \cdot 261K / 7{,}0 \cdot 10^6 Pa \cdot 293K$

$V_f = 3654 \cdot 10^8 cm^3 / 2051 \cdot 10^6$

$V_f = 1{,}78 \cdot 10^4 cm^3$

$V_f = 18 \cdot 10^3 cm^3$

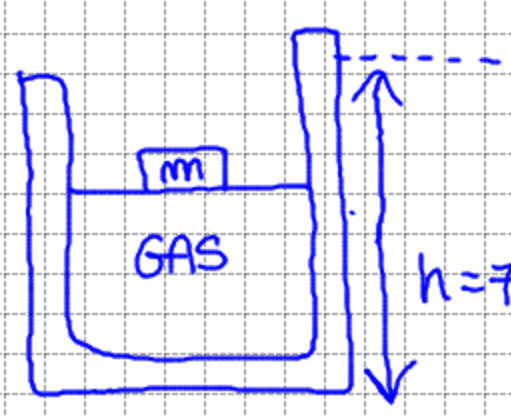
n° 40

$V_i = 0{,}300 m^3$

$h = 70{,}0 cm$

$P_i = 1{,}30 \cdot 10^5 Pa$

$m = 573 kg$



$T = cost$

$P_f = ?$

$h_f = ?$

$\Delta P = \frac{F}{S} = \frac{mgh}{V} = \frac{573 kg \cdot 9{,}81 m/s^2 \cdot 7 m}{0{,}300 m^3} =$

$131115{,}9 Pa =$

$0{,}13 \cdot 10^5 Pa$

$\Delta P = P_f - P_i$; $P_f = 0{,}13 \cdot 10^5 Pa + 1{,}3 \cdot 10^5 Pa = 1{,}43 \cdot 10^5 Pa$

$cost. = P \cdot V$ $P_f V_f = P_i V_i$

$1{,}43 \cdot 10^5 Pa \cdot V_f = 1{,}3 \cdot 10^5 Pa \cdot 0{,}3 m^3$

$V_f = 0{,}273 m^3$

$S = \frac{V_i}{h_i} = \frac{0{,}300 m^3}{0{,}7 m} = 0{,}428 m^2$.

$V_f = S \cdot h_f$

$0{,}273 m^3 = 0{,}428 m^2 \cdot h_f$

$h_f = 0{,}637 m = 63{,}7 cm$