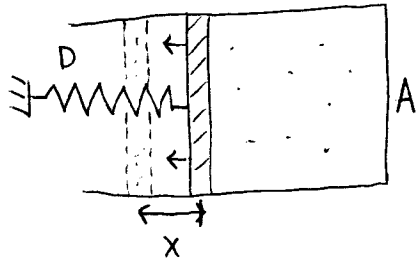


22.)



$$p_2 = p_1 = 100 \text{ kPa} \quad T_1 = 300 \text{ K} \quad A = 100 \text{ cm}^2$$

$$V_1 = 1 \text{ l}$$

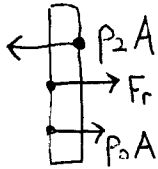
$$T_2 = 600 \text{ K}$$

$$p_2 = ?$$

$$F_r = -Dx$$

$$pV = nRT$$

$$\vec{a} = \frac{\vec{F}_e}{m}$$



$$V_2 = V_1 + Ax$$

$$0 = F_e = p_2 A - p_0 A - F_r \rightarrow p_2 = p_0 + \frac{Dx}{A}$$

$$a = 0$$

$$F_e = 0$$

$$pV = nRT \quad n, R \text{ all}$$

$$\frac{pV}{T} = \text{all}$$

$$\frac{p_1 V_1}{T_1} = \frac{p_2 V_2}{T_2} \rightarrow T_2 p_1 V_1 = T_1 p_2 V_2$$

$$T_2 p_0 V_1 = T_1 \left(p_0 + \frac{Dx}{A} \right) (V_1 + Ax)$$

$$2p_0 V_1 = p_0 V_1 + p_0 Ax + \frac{DxV_1}{A} + Dx^2$$

$$Dx^2 + \left(p_0 A + \frac{DV_1}{A} \right) x - p_0 V_1 = 0$$

$$5000x^2 + 1500x - 100 = 0$$

$$50x^2 + 15x - 1 = 0$$

$$x_1 = -0,356 \text{ m} \quad x_2 = 0,056 \text{ m}$$

$$p_2 = p_0 + \frac{Dx}{A} = 10^5 \text{ Pa} + \frac{5000 \cdot 0,056}{0,01} \text{ Pa} = \underline{\underline{128000 \text{ Pa}}}$$