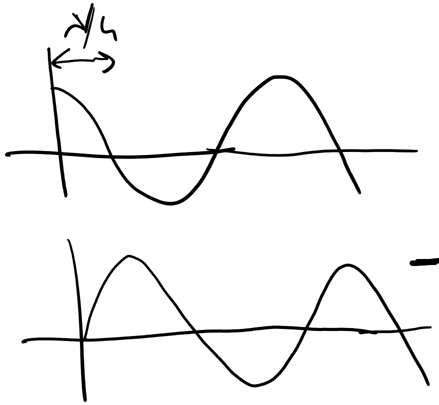
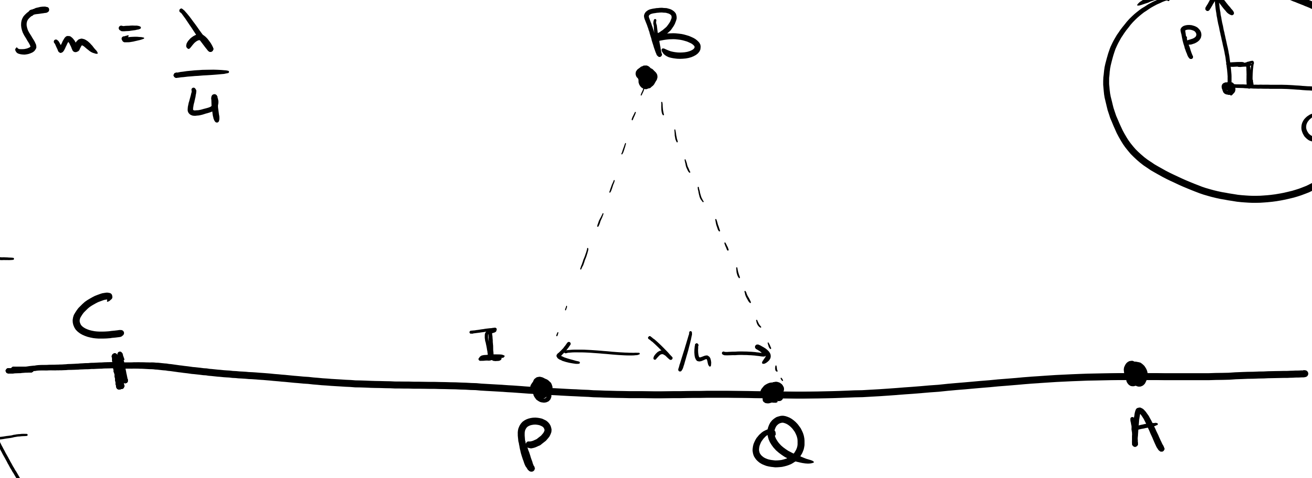
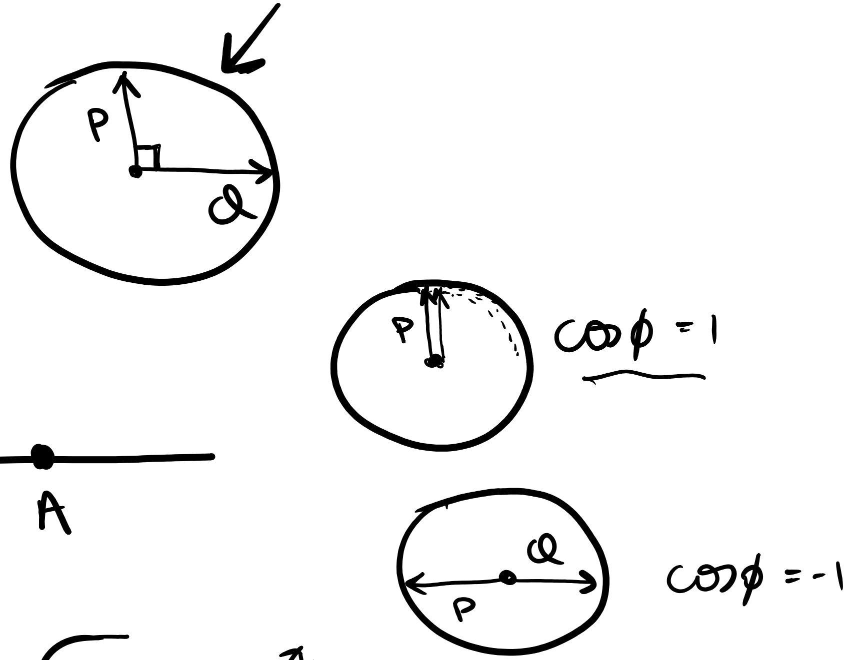
$\lambda = 20\,m$

$\Delta x = 5\,m = \frac{\lambda}{4}$





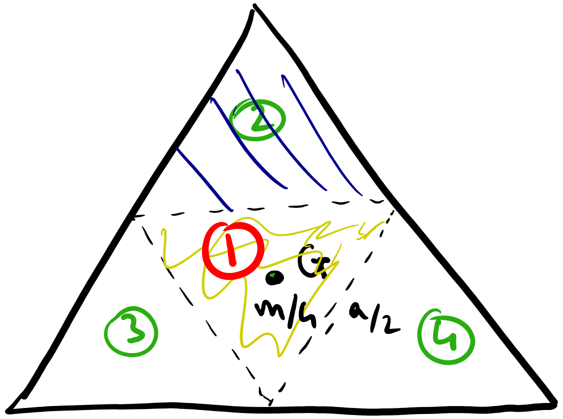


$I_B = I_1 + I_2 + 2\sqrt{I_1 I_2}\cos\phi$

$= 2I$

$I_A = I + I + 2I = 4I$

$I_C = I + I - 2I = 0$



$I_0 = kma^2$

$ma^2/12$

$\frac{1}{4}$

$\frac{1}{2}$

$\frac{I_0}{4} \times \frac{1}{4}$

$I_1 = \frac{I_0}{16}$

$I_0 = I_1 + I_2 + I_3 + I_4$

$I_0 = I_1 + 3I_2$

$I_0 = \frac{I_0}{16} + 3I_2$

$I_2 = \frac{5I_0}{16}$

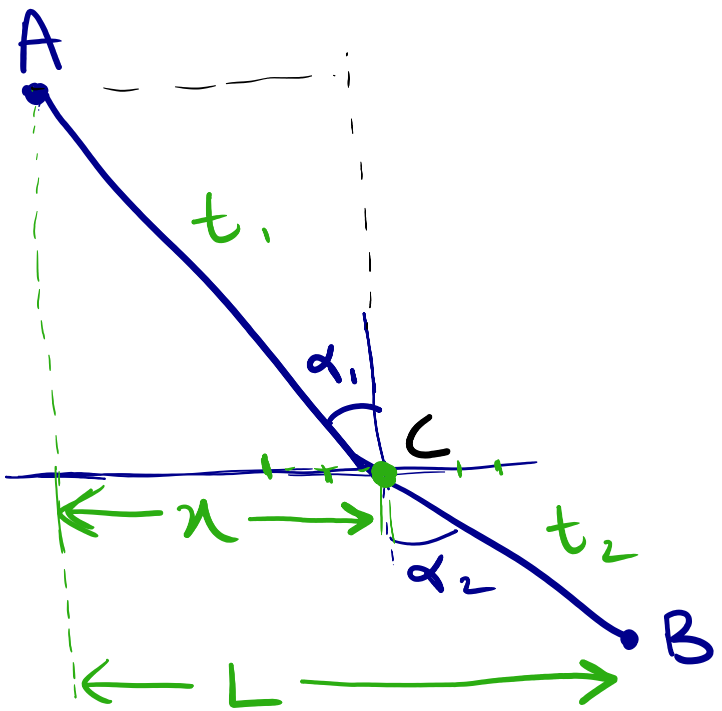
$I = I_0 - \frac{5I_0}{16}$

$= \frac{11I_0}{16}$

$$\text{Intensity} = \frac{\text{Power}}{\text{Area}} = \frac{E/t}{\text{Area}} \qquad (F \cdot x)/t$$

$$\underset{\text{(energy flux)}}{\text{Intensity}} = \frac{F \cdot v}{\text{Area}} = \frac{F_{av.} \times c}{\text{Area}} \checkmark$$

W/m^2



$$t_1 = \frac{AC}{v_1} = \frac{x}{\sin\alpha_1 v_1}$$

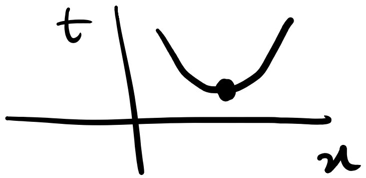
$$t_2 = \frac{BC}{v_2} = \frac{L-x}{\sin\alpha_2 v_2}$$

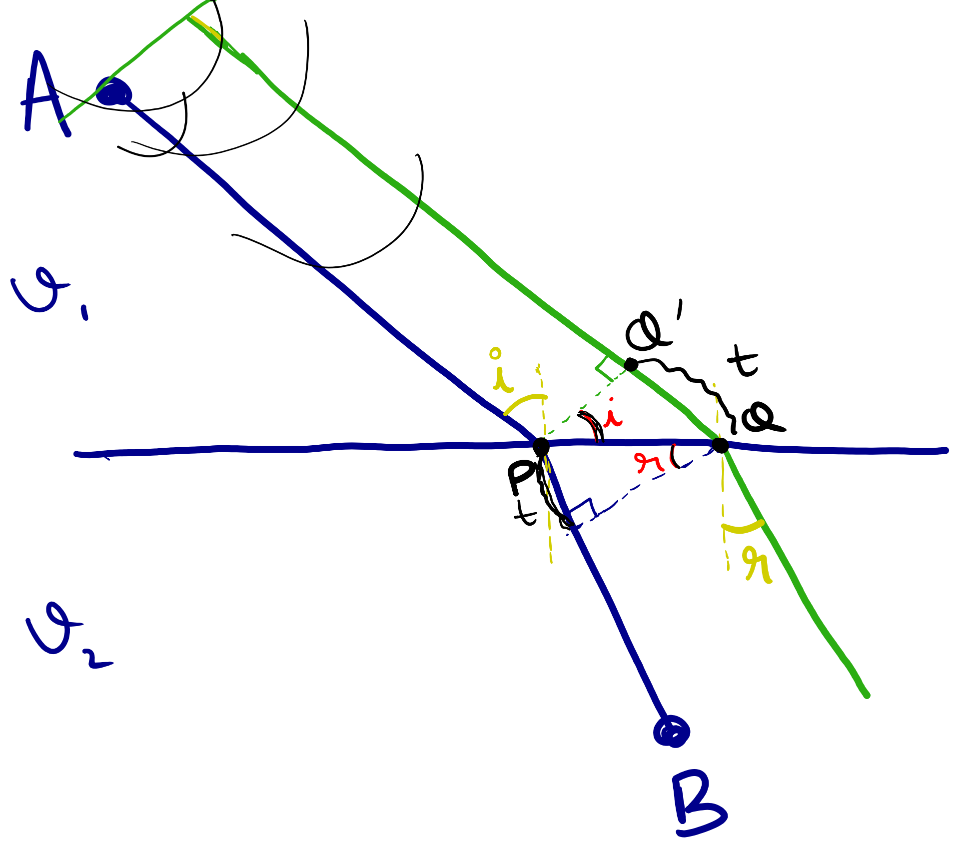
$$t_1 + t_2 = f(x)$$

$$\frac{dt}{dx} = 0$$

$$y = f(x)$$

$$\frac{dy}{dx} = 0$$



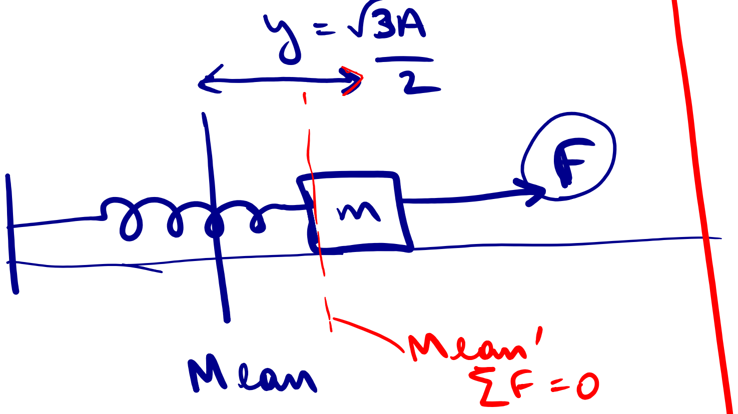


$$\sin i = \frac{v_1 t}{PQ}$$

$$\sin r = \frac{v_2 t}{PQ}$$

$$\frac{\sin \alpha_1}{\sin \alpha_2} = \frac{v_1}{v_2}$$

(Light tends to travel on the path where it takes the least amount of time.)



$x = 0$

$kx = 0$

$\Sigma F = 0 \ , \ F - kx$

$F = kx$

$x = F/k$

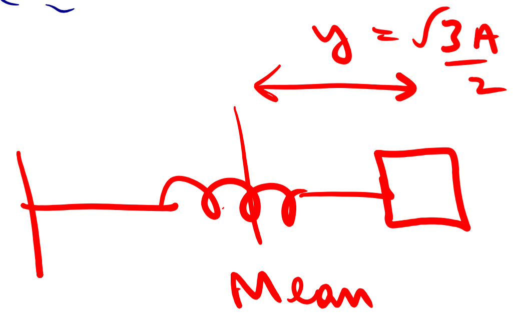
$v = \omega\sqrt{A^2 - y^2}$ $\quad$ $\underline{y}$ = distance from mean

$= \omega\sqrt{A^2 - 3A^2/4} = \dfrac{A\omega}{2}$

$\dfrac{1}{2}mv^2 = \dfrac{1}{2}m\dfrac{A^2\omega^2}{4}$

$+$

$\dfrac{1}{2}m\omega^2A^2$



New KE $= \cancel{\dfrac{1}{2}}mA^2\omega^2\left(\dfrac{5}{4}\right) = \cancel{\dfrac{1}{2}}mv^2$

$\underline{a = \omega^2 x}$

$v = \dfrac{A\omega}{2} \times \sqrt{5}$

$\cancel{\omega}\sqrt{A'^2 - (\sqrt{3}A/2)^2} = \dfrac{A\cancel{\omega}}{2} \times \sqrt{5}$ $\quad$ $A'^2 = \sqrt{2}A$

$A'^2 - \dfrac{3A^2}{4} = \dfrac{5A^2}{4}$

Molar heat capacity

$PT^{-5} = \text{const.}$

C_v

$PV^{x} = \text{const}$

$$Q = nC\Delta T$$

$$Q = \Delta U + W_g$$

$$\cancel{n} C \cancel{\Delta T} = \cancel{n} C_v \cancel{\Delta T} + \frac{\cancel{n} R \cancel{\Delta T}}{1-x}$$

$$PV = nRT$$

$$C = C_v + \frac{R}{1-x}$$

$$P(PV)^{-5} = k$$

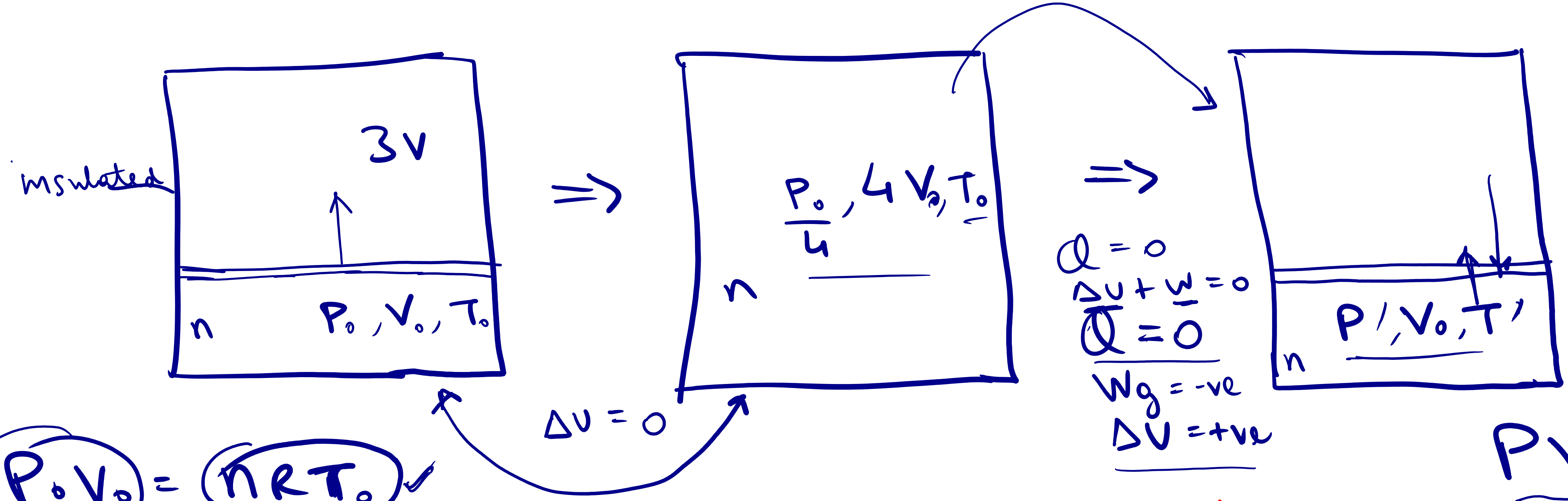
$$\left(P^{-4} V^{-5}\right)^{-1/4} = k$$

$$PV^{5/4} = k$$

$$x = 5/4$$

$$= \frac{3R}{2} + \frac{R}{-1/4}$$

$$= \frac{3R}{2} - 4R = -\frac{5R}{2}$$



$TV^{\gamma-1} = const$

$PV^{\gamma} = const$

$P_0V_0 = nRT_0$ ✓

P_0, V_0

$W = 0$

$Q = 0$

$\Delta U = 0, \Delta T = 0$

$T_0(4V_0)^{\gamma-1} = T'(V_0)^{\gamma-1}$

$\frac{T'}{T_0} = (4)^{\gamma-1}$

$T' = 2T_0$

$Q = 0$

$\Delta U + W_g = 0$

$\Delta U = \frac{nR\Delta T}{\gamma - 1}$

$= \frac{nR(2T_0 - T_0)}{\gamma - 1}$

$R = 0.082$ atm L/mol K

$(2)(1) = \frac{1}{12} \times 2 \times \boxed{T_0}$ ✓

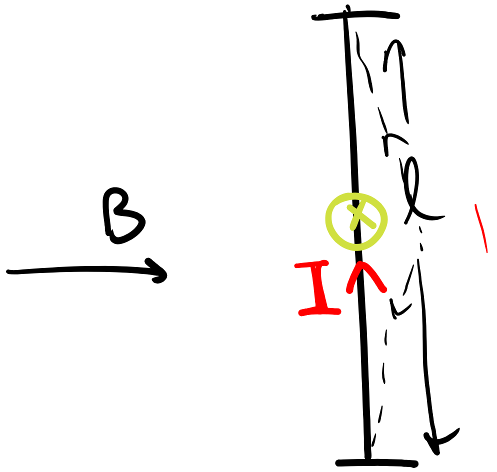
J

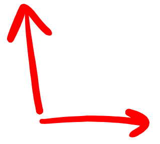
SI

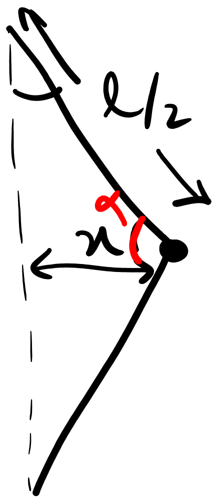
$\frac{P_0V_0}{\gamma - 1} = \frac{nRT_0}{\gamma - 1}$

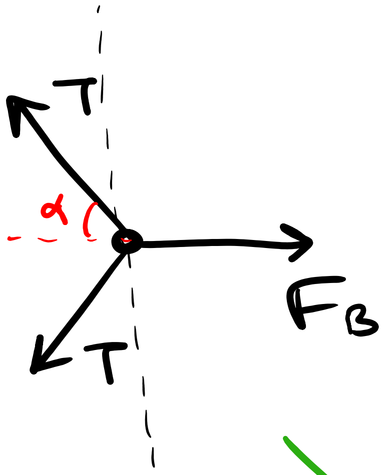
$$\frac{2 \times \underset{1}{2} \times 1.01325 \times \cancel{10}^{\cancel{5}} \times \dfrac{1}{\cancel{1000}}}{1} \sim 4$$

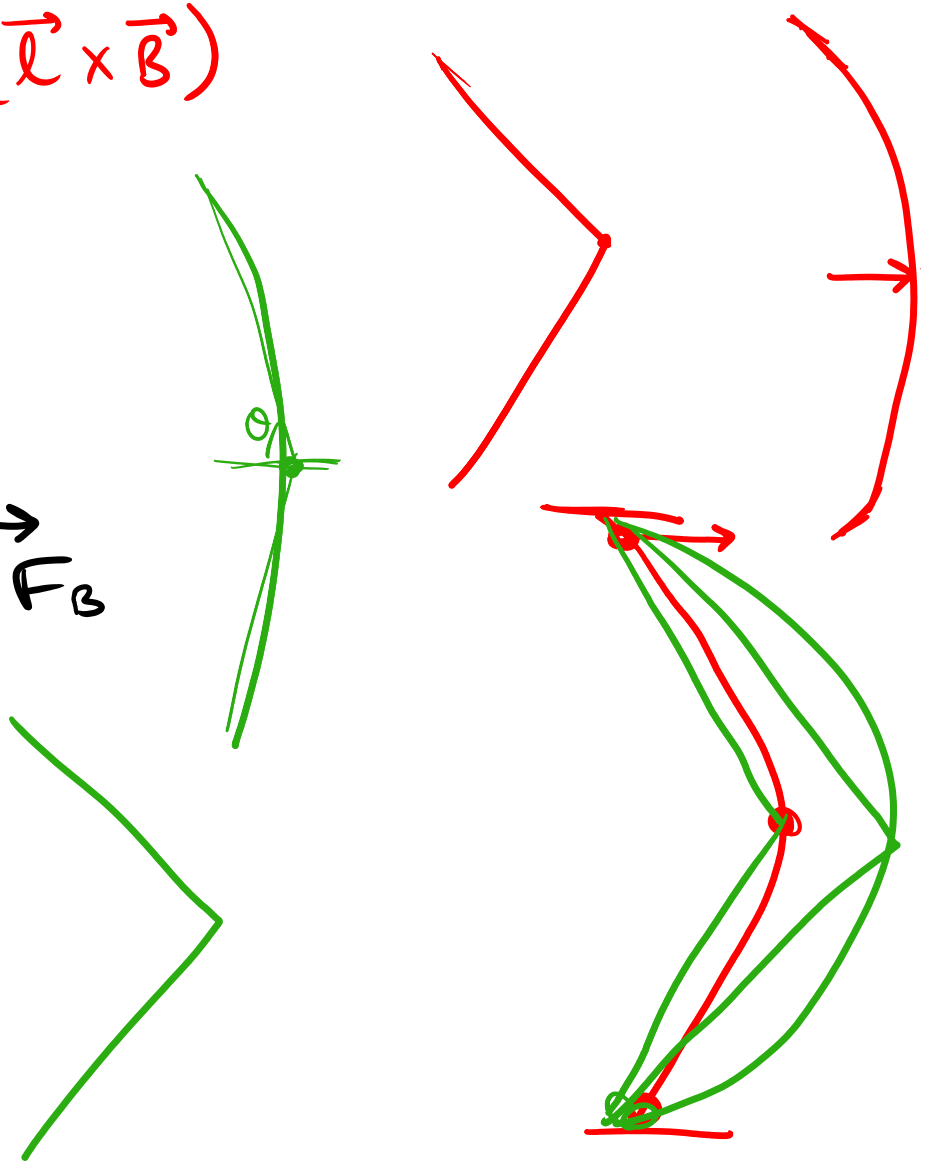
$$F_B = I(\vec{l} \times \vec{B})$$



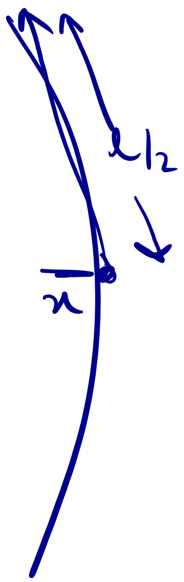


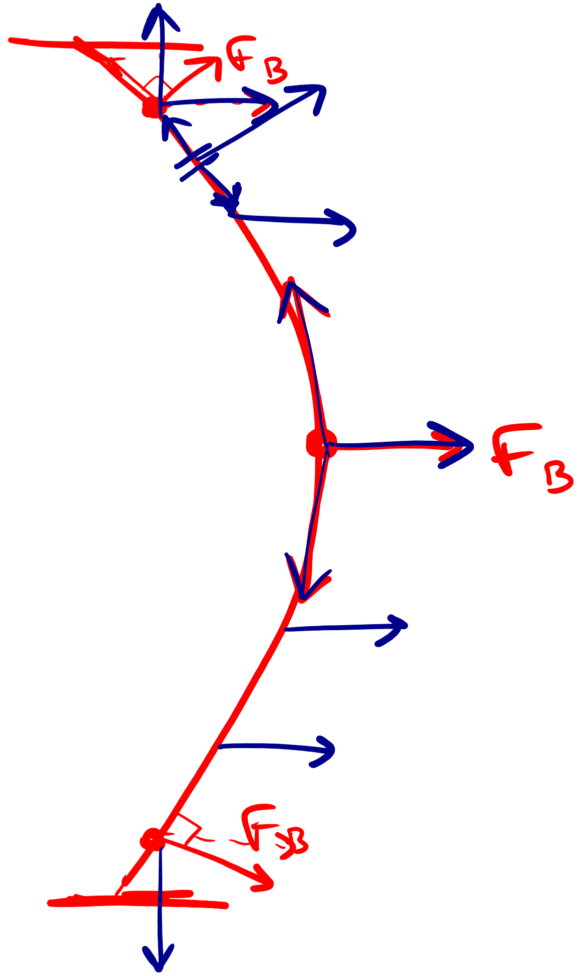


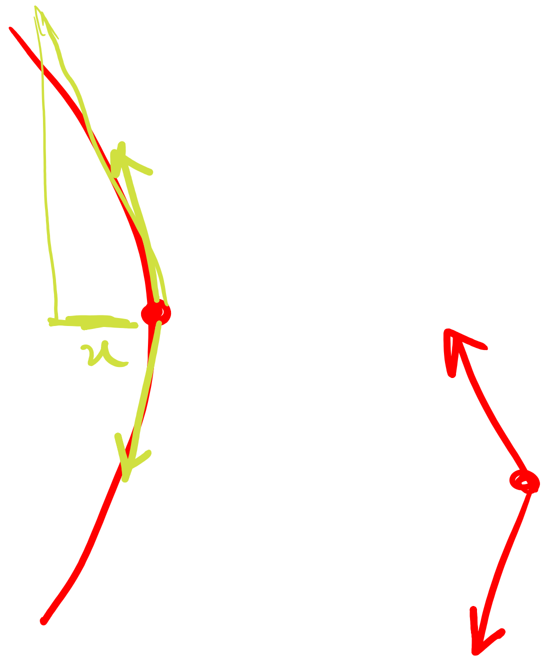


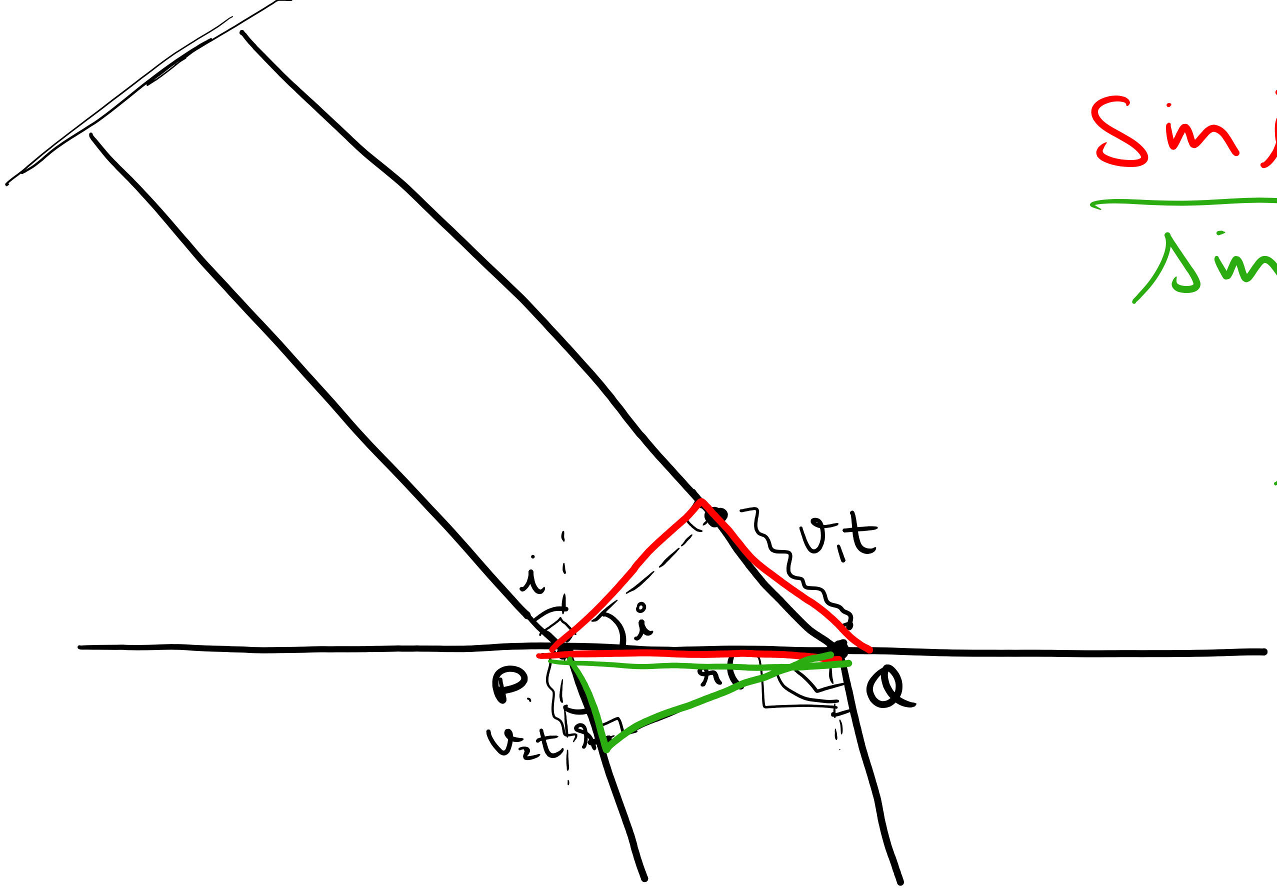


$x << l$



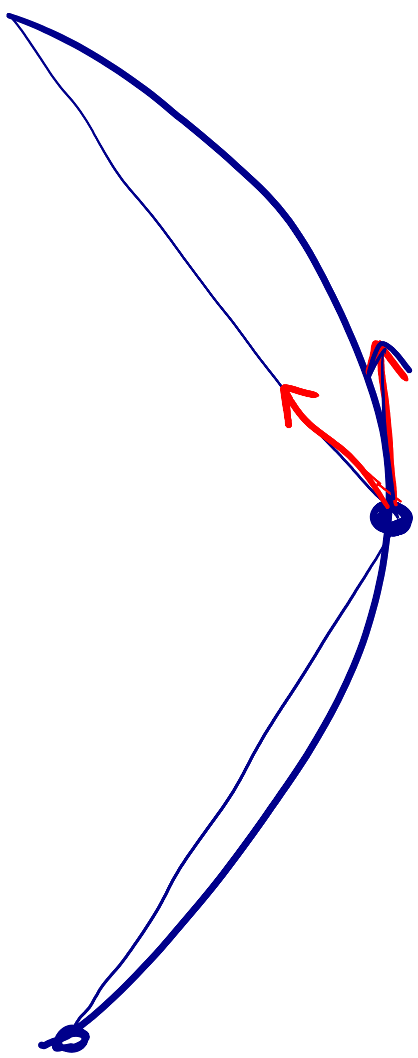


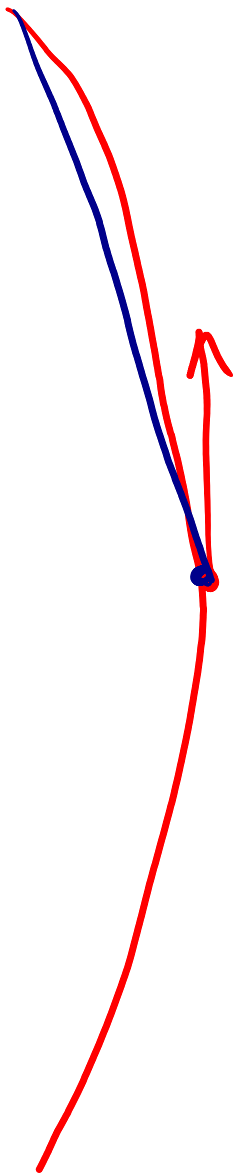




$$\frac{\sin i}{\sin r} = \frac{v_1 t / \cancel{PQ}}{v_2 t / PQ}$$

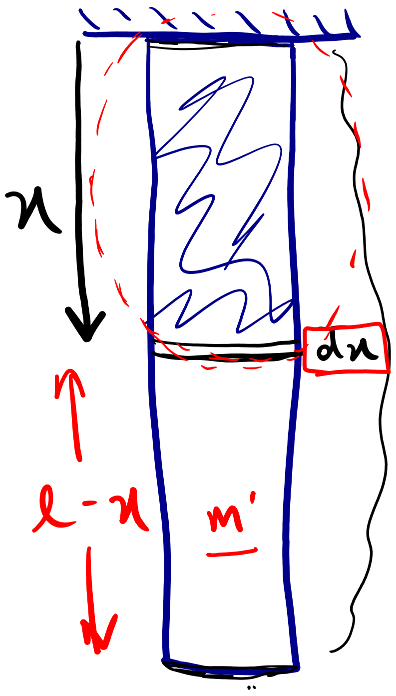
$$\frac{\sin i}{\sin r} = \frac{v_1}{v_2}$$

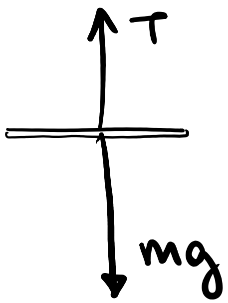




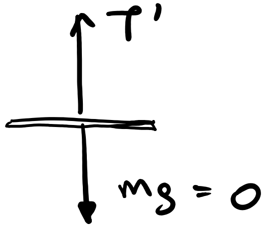
m, l

$$m' = \frac{m}{l} \times (l - x)$$

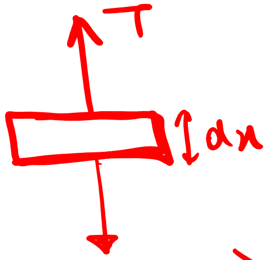


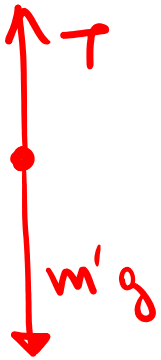


$$\underline{T = mg}$$



$$\underline{T' = 0}$$





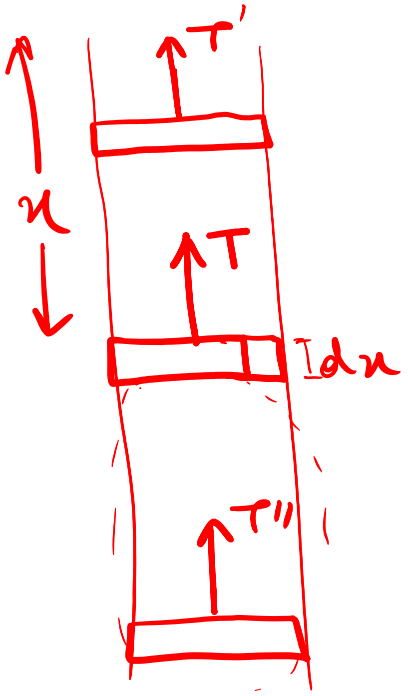
$$T = m'g$$

$$\underline{T_{(x)} = \frac{m}{l}(l - x)g}$$

$$Y \frac{d\Delta l}{dx} = \frac{T_{(x)}}{A}$$

$$\int d\Delta l = \int \frac{m}{lAY}(l - x) g \, dx$$

$$\Delta l = \frac{mg}{AlY}\left[l^2 - \frac{l^2}{2}\right]$$



$$I = neAv_d$$

$$\frac{V}{R} = neAv_d$$

$$v_d = \frac{V}{ne\cancel{A}\left(\rho l/\cancel{A}\right)}$$

$$R\uparrow = \frac{\rho l\uparrow}{A\uparrow}$$

$$2AB_2 \longrightarrow 2AB_2 + B_2$$

$$1 - 0.8 \qquad 0.8 \qquad 0.4$$

$$= 0.2$$

$$P_f(10) = (0.8 + 0.4 + 0.2)(R)(546) \checkmark$$

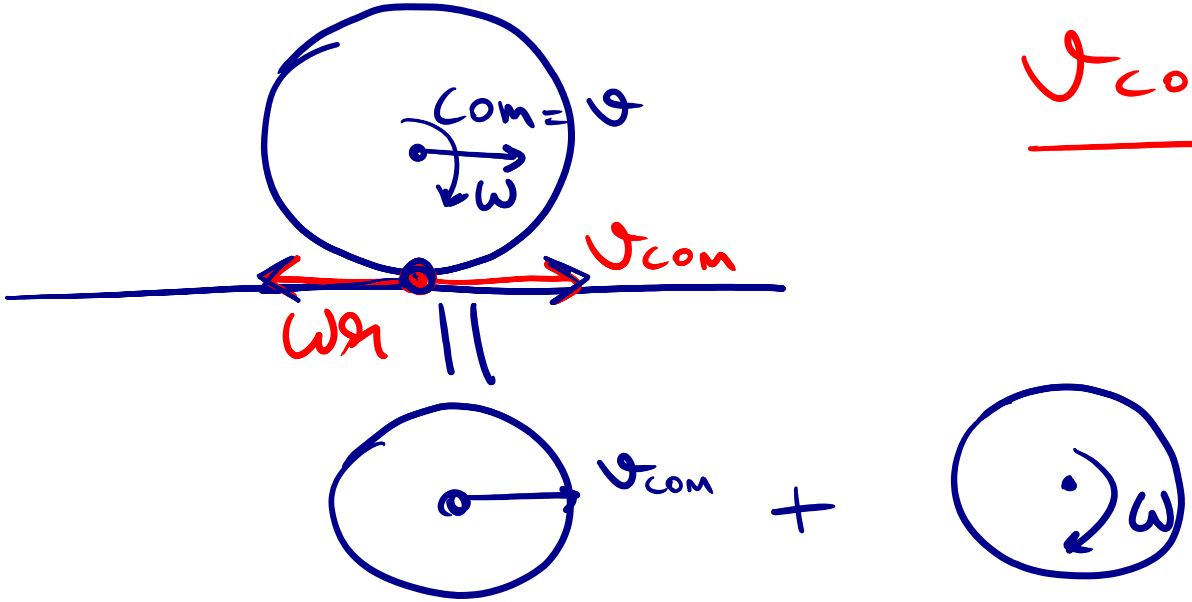
$$P\cancel{V} = nRT$$

$$\frac{P}{nT} = \text{const}$$

$$PV = nRT$$

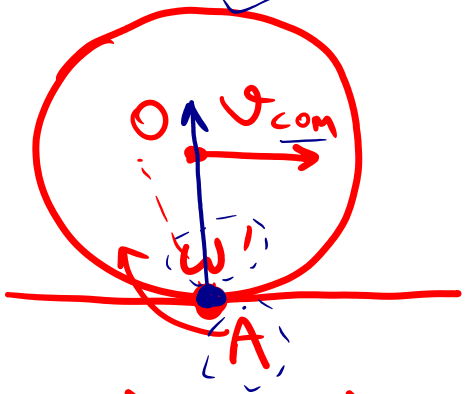
$$(2.5)(10) = 1(0.0821)(273)$$

COM as one of the axis



$$\underline{v_{com} = \omega r} = 0$$

$$v_{com} = \omega' r$$

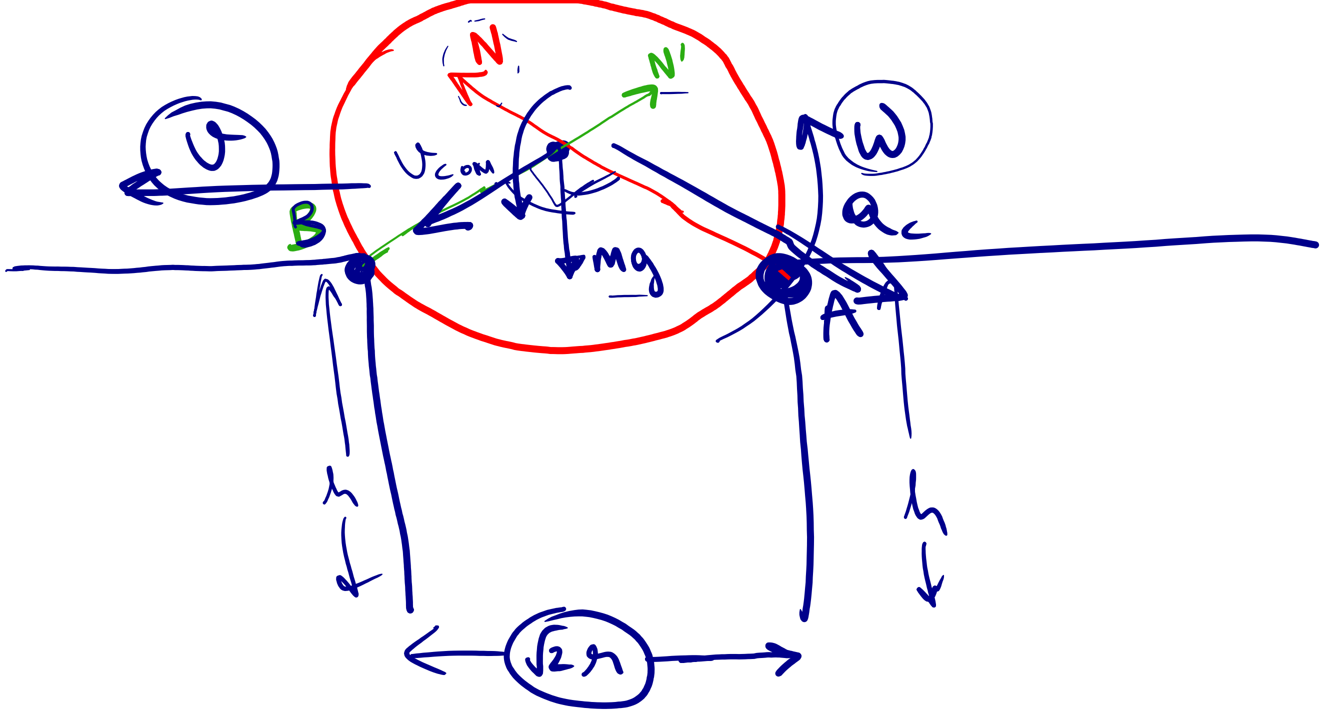


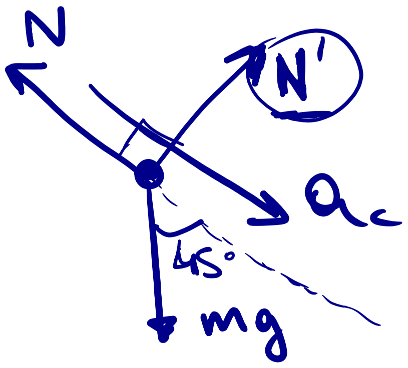
$$\vec{v} = \vec{\omega} \times \vec{r}$$

$$v_{com} = \vec{\omega}' \times \vec{r}$$

$$\underline{\omega r} = \omega' r$$

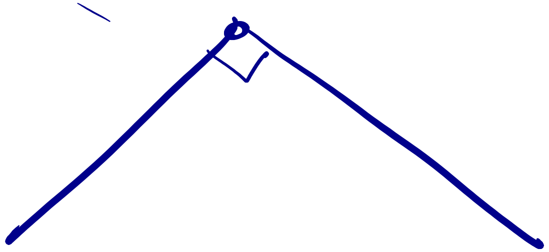
$$\underline{\omega} = \underline{\omega'}$$

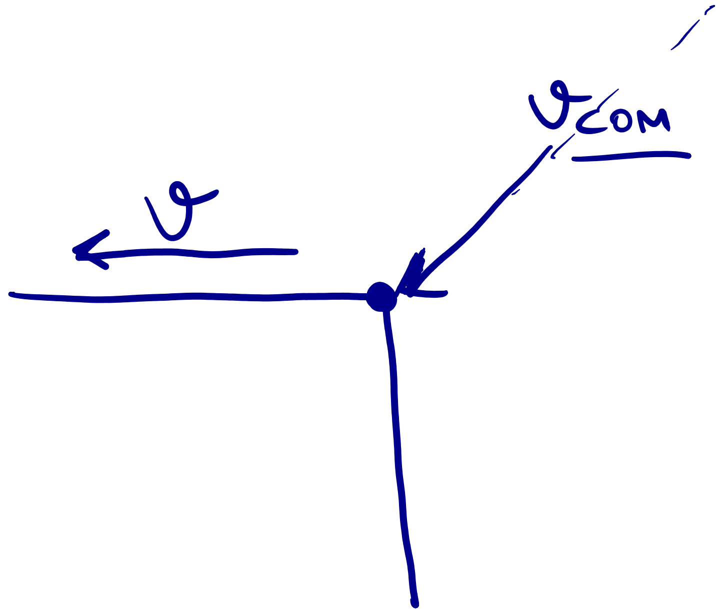




$$\frac{mg}{\sqrt{2}} - N = m\frac{v_{com}^2}{r}$$

v_{com}




v
v_COM