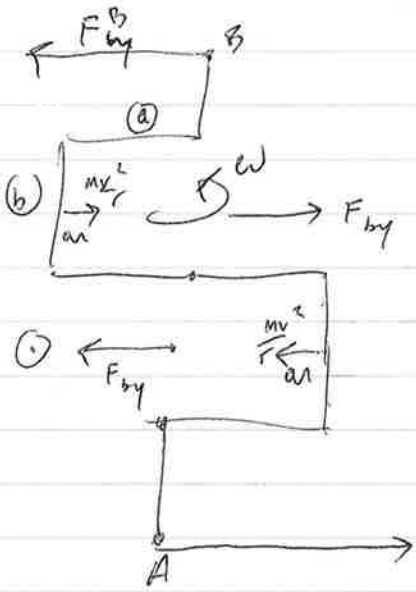
mom 3



say each rod has linear mass density λ.

then force to keep in circular motion is

$$2\int \frac{dm\,v^2}{r} = 2\int dm\, r\omega^2$$

$$= 2\lambda\omega^2\int_0^{\ell} x\,dx = \lambda\omega^2\ell^2 = m\ell\omega^2$$

$$+ \quad m\ell\omega^2$$

$$F_{by} = 2m\ell\omega^2$$

~~$\times$ 2 for other~~

hence $\text{torque}_{by} = 2\left(\frac{\ell}{2}\right)$ (b)

torque to balance: $\ell\left(\frac{m\ell\omega^2}{2}\right)$ (a) $+ \int_0^{\ell} x\,(\lambda\,dx)\,\ell\omega^2$ $\frac{dm}{m}$

also $\frac{m\ell^2\omega^2}{2}$.

multiply by 2 for other half: $\tau_{by} = 2m\ell^2\omega^2$.

τ_{by} balances with $2\tau_A = 2(2\ell F_A) = 2m\ell^2\omega^2$

$$F_A = \frac{m\ell\omega^2}{2}$$