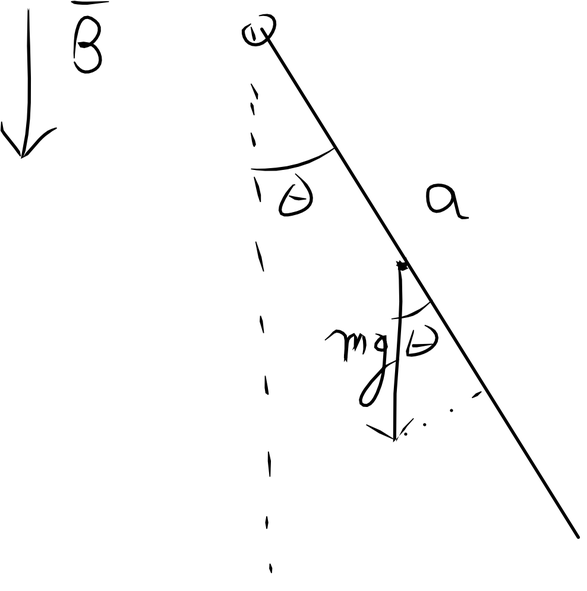

$$\bar{N}_B = \bar{M} \times \bar{B} = I(\bar{S} \times \bar{B} N)$$

$$I = \frac{\varepsilon}{R} \qquad \bar{S} \times \bar{B} = a^2 B \sin\left(\frac{\pi}{2} - \theta\right) = a^2 B \cos\theta$$

$$\Phi = a^2 B \sin\theta N \qquad \frac{d\Phi}{dt} = a^2 N B \cos\theta \dot{\theta}$$

$$\varepsilon = U_0 \sin(\omega t) - \frac{d\Phi}{dt} = U_0 \sin(\omega t) - a^2 N B \cos\theta \dot{\theta}$$

$$N_B = \frac{1}{R}\left(U_0 \sin(\omega t) - a^2 B N \cos\theta \dot{\theta}\right) a^2 N B \cos\theta$$

$$N_c = N_B - mg \frac{a}{2} \sin\theta$$

$$\sin\theta \to \theta \qquad \cos\theta \to 1$$

$$I\ddot{\theta} = \frac{U_0 \sin(\omega t) a^2 N B}{R} - \frac{a^4 B^2 N^2}{R}\dot{\theta} - \frac{mga}{2}\theta$$

$$\theta = A e^{i\omega t}$$

$$-A\omega^2 e^{i\omega t} = \frac{U_0 \sin(\omega t) a^2 N B}{RI} - A\frac{a^4 B^2 N^2}{RI} i\omega e^{i\omega t} - \frac{mga}{2I} A e^{i\omega t}$$

$$\operatorname{Im}\left(i \frac{U_0 a^2 N B}{RI} e^{i\omega t}\right)$$

$$A = \frac{U_0 a^2 N B}{RI} \cdot \frac{1}{\frac{mga}{2I} + i\omega \frac{a^4 B^2 N^2}{RI} - \omega^2}$$

$$A = \frac{U_0 a^2 N B}{\left(\frac{mgaR}{2} - \omega^2 RI\right) + i\omega a^4 B^2 N^2}$$

$$|A| = \frac{U_0 a^2 N B}{\sqrt{\left(\frac{mgaR}{2} - \omega^2 RI\right)^2 + \left(\omega a^4 B^2 N^2\right)^2}}$$

$$z = \frac{1}{a + ib} = \frac{a - ib}{a^2 + b^2}$$

$$|z| = \sqrt{\frac{a^2 + b^2}{(a^2 + b^2)^2}} = \frac{1}{\sqrt{a^2 + b^2}}$$