

$$ma = \bar{F} = -kx$$

torque

$$I\ddot{\theta} = \tau = -k\theta$$

$$\cancel{I}\ddot{\theta} + \frac{k}{I}\theta = 0$$

$$\omega = \sqrt{\frac{k}{I}}$$

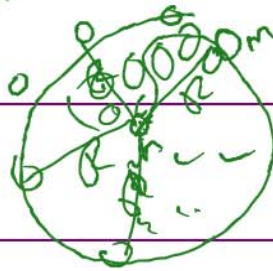
$$\ddot{\theta} + \omega^2\theta = 0$$

$$\theta(t) = \theta_m \sin(\omega t + \phi)$$

$$T = \frac{2\pi}{\omega}$$

$$I = \frac{1}{2}MR^2$$

$$I = \int r^2 dm$$



| L              | Q  |
|----------------|--|
| x              | $\theta$   |
| $\dot{x} = v$  | $\omega \equiv \dot{\theta}$                     |
| $\ddot{x} = a$ | $\alpha = \dot{\omega} = \frac{d^2\theta}{dt^2}$ |
| m              | I  |
| F              | $\tau$   |
| t              | t  |
| P              | L  |

$$I = mR^2$$

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