

Energy method

Total Mechanical energy of the system remain constant

$$\therefore \boxed{\frac{dE}{dt} = 0}$$

Use: $\frac{dx}{dt} = v$; $\frac{dv}{dt} = a$; $\frac{d\theta}{dt} = \omega$; $\frac{d\omega}{dt} = \alpha$

Ⓐ Finally write eqn. in the form of
$$\left. \begin{aligned} F &= -kx \\ a &= -\omega^2 x \end{aligned} \right\} \text{(or)} \quad \begin{aligned} \tau &= -c\theta \\ \alpha &= -\omega^2 \theta \end{aligned}$$

Ⓑ Now. find

$$\begin{aligned} \omega &= \\ T &= \\ f &= \end{aligned}$$