

A particle is rotating about an axis in x-y plane.

Suppose, this axis has coordinates $x = x_0, y = y_0$.

Then, its coordinates satisfy the equation:

$$(x - x_0)^2 + (y - y_0)^2 = r^2 \text{ - equation of circle}$$

r - radius of rotating

turning moment (or torque) - is the tendency of a force to rotate an object about an axis, mathematically, torque is defined as the cross product of the lever-arm distance and force, which tends to produce rotation:

$$\boldsymbol{\tau} = \mathbf{r} \times \mathbf{F}$$

or

$$\tau = r * F * \sin(\theta)$$

\mathbf{F} is the force vector, and F is the magnitude of the force,

θ is the angle between the force vector and the lever arm vector.

$\boldsymbol{\tau}$ is the turning moment vector and τ is the magnitude of the turning moment.

For, example, if F - force of tension of string and $\theta=180$, then $\tau=0$.

