

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:

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

or

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

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

$\theta$  is the angle between the force vector and the lever arm vector.

$\tau$  is the turning moment vector and  $\tau$  is the magnitude of the turning moment.

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

