YAKEEN NEET 2.0

2026

Vectors

Physics

Lecture - 9

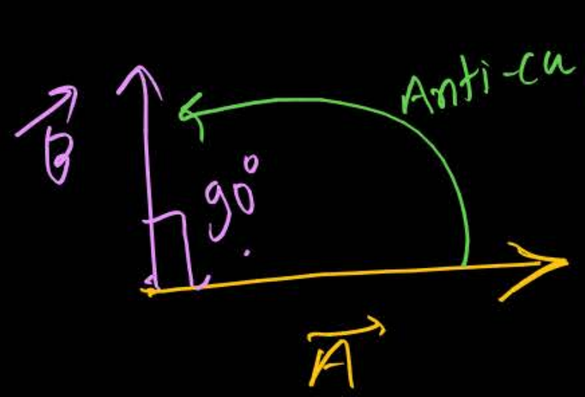
By- Manish Raj (MR Sir)

Todays Goal

Scalar Triple Product

direction of cross Product

$\vec{A} \times \vec{B} = AB\sin\theta\,\hat{n}$

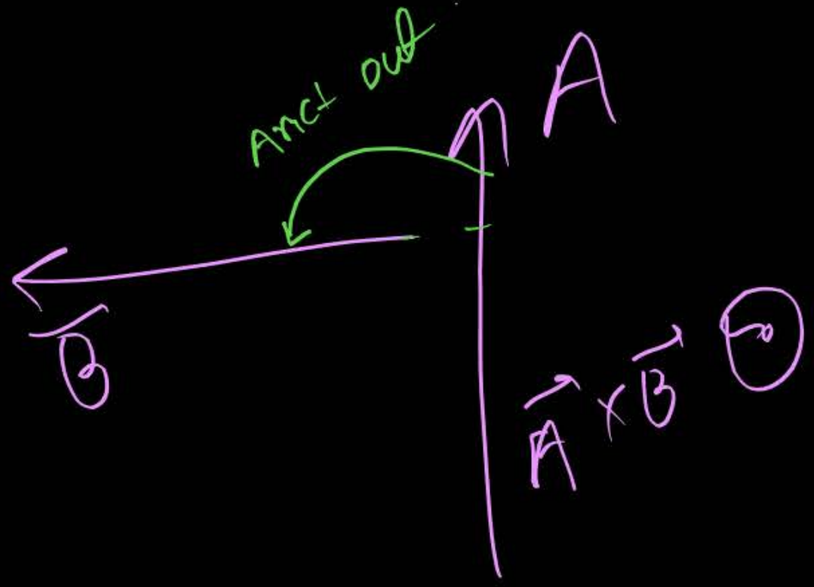


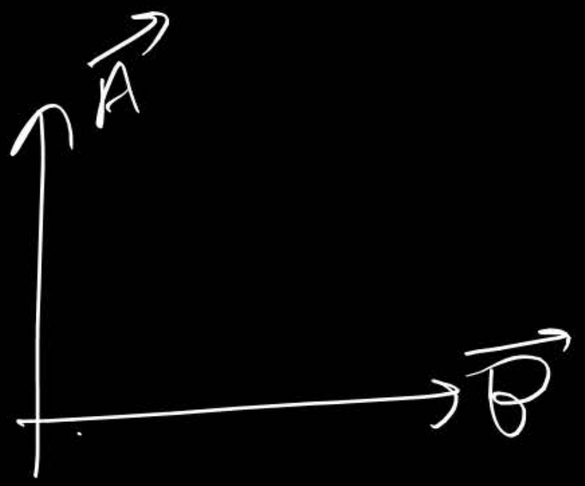
$\vec{A} \times \vec{B}$ ⊙ outward.

Place your four fingers of right hand along 1st vector $\vec{A}$

& slap 2nd vector ✓

Then thumb will represent dirn of $\vec{A} \times \vec{B}$ ✓



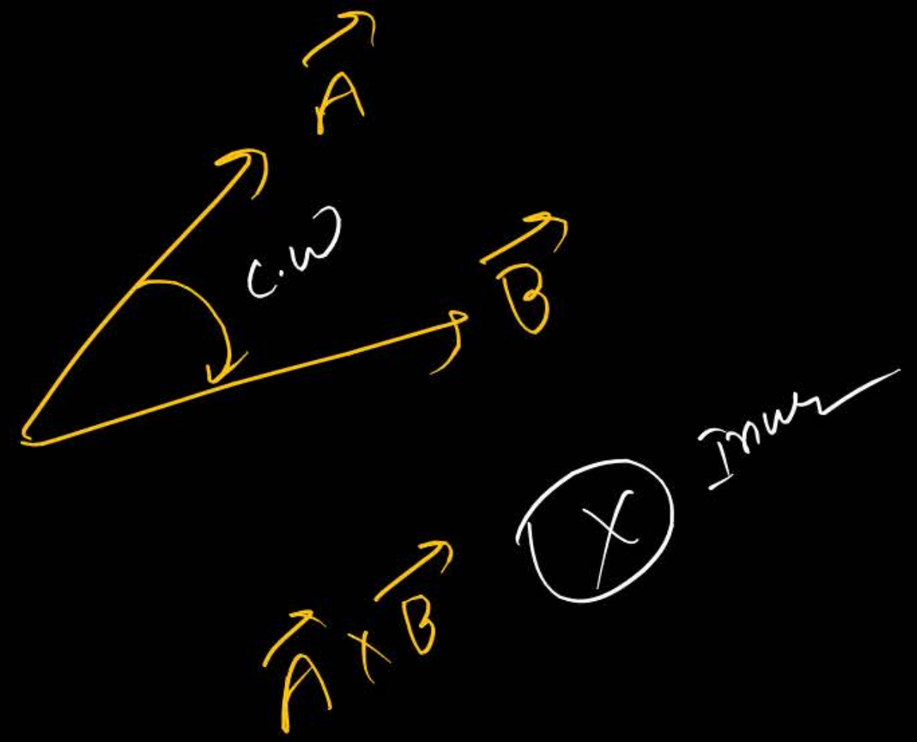


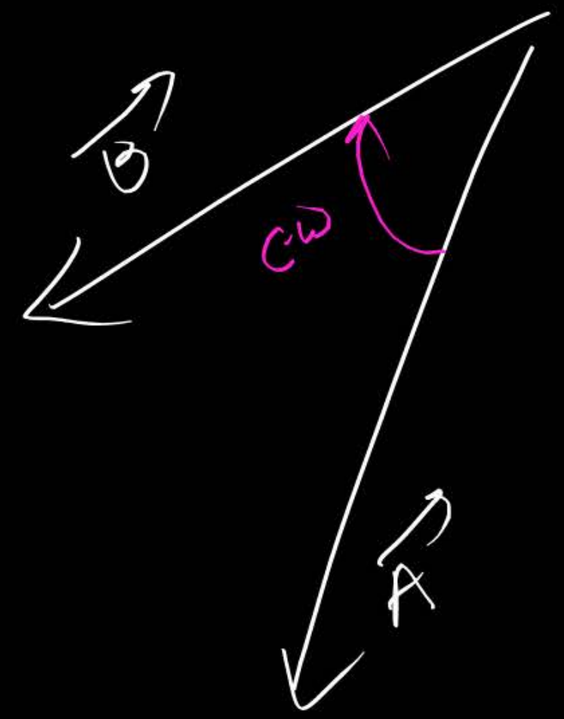
$\vec{A} \times \vec{B}$ = Inward ⊗

$\vec{B} \times \vec{A}$ = outward ⊙

1st vel.

Angle b/w $\vec{A} \times \vec{B}$ & $\vec{B} \times \vec{A}$ is 180°


$\vec{A}$
C.W
$\vec{B}$
$\vec{A} \times \vec{B}$
Inw



dir^n $\vec{A} \times \vec{B}$ = Into

(I) $\vec{\tau} = \vec{r} \times \vec{F}$

(II) $\vec{f} = q(\vec{v} \times \vec{B})$

(III) $\vec{f} = I\vec{dl} \times \vec{B}$

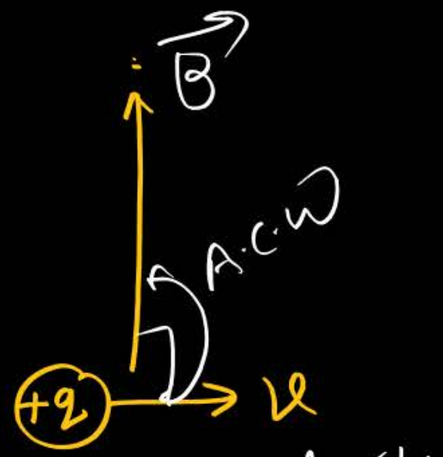
(IV) $\vec{\tau} = \vec{P} \times \vec{E}$

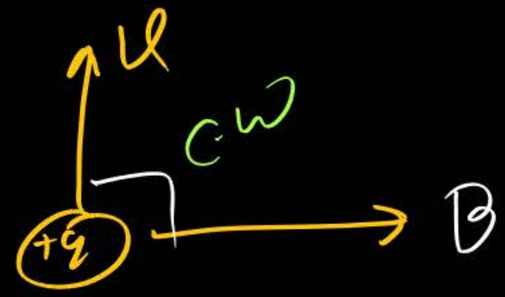
(V) $\vec{L} = \vec{r} \times \vec{p}$

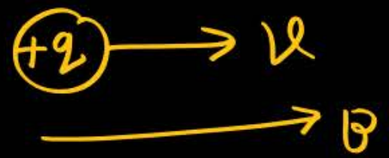
$$F = q(\vec{v} \times \vec{B})$$

$$= q v B \sin\theta$$

Angle θ b/w $\vec{v}$ & $\vec{B}$



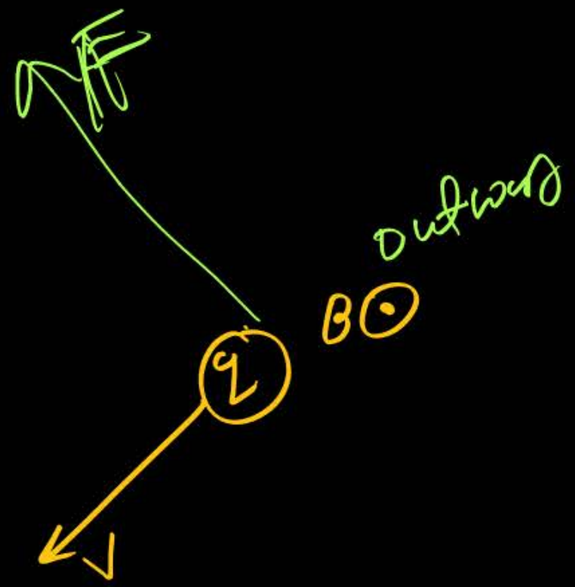


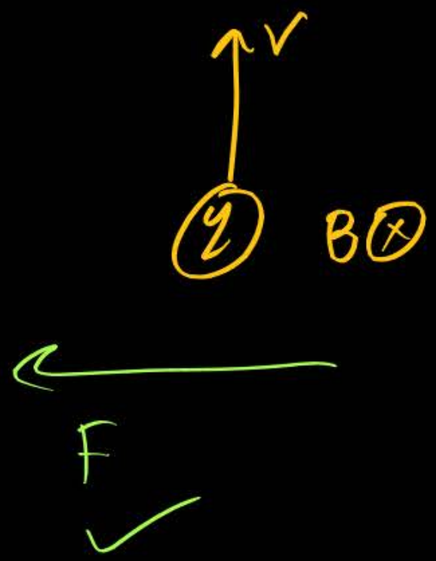


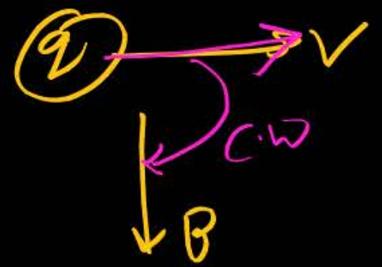
F = 0

$F = qvB\sin\theta$

F = 0 ✓



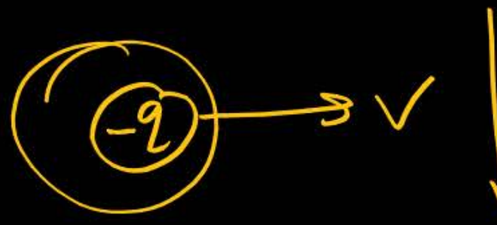




F ⊗ Into

$$F = q(\vec{v} \times \vec{B})$$

↳ ⊥r to the plane of $\vec{v}$ & $\vec{B}$



$F = \otimes$ Inward ✗
$= \odot$ outward

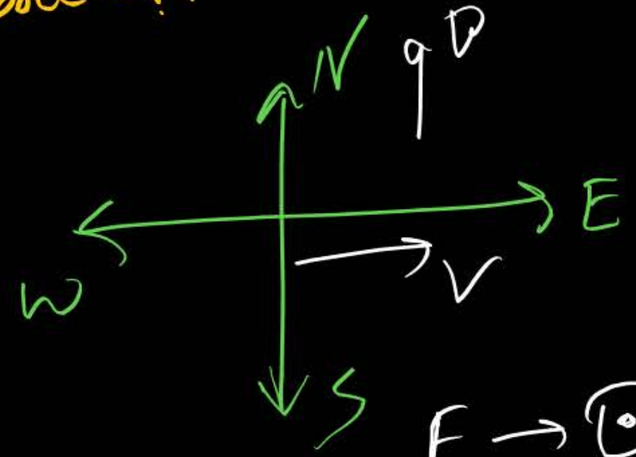
$F = q(\vec{v} \times \vec{B})$

$= -ve\, q(\vec{v} \times \vec{B})$

u → East

B → North

Force = ??

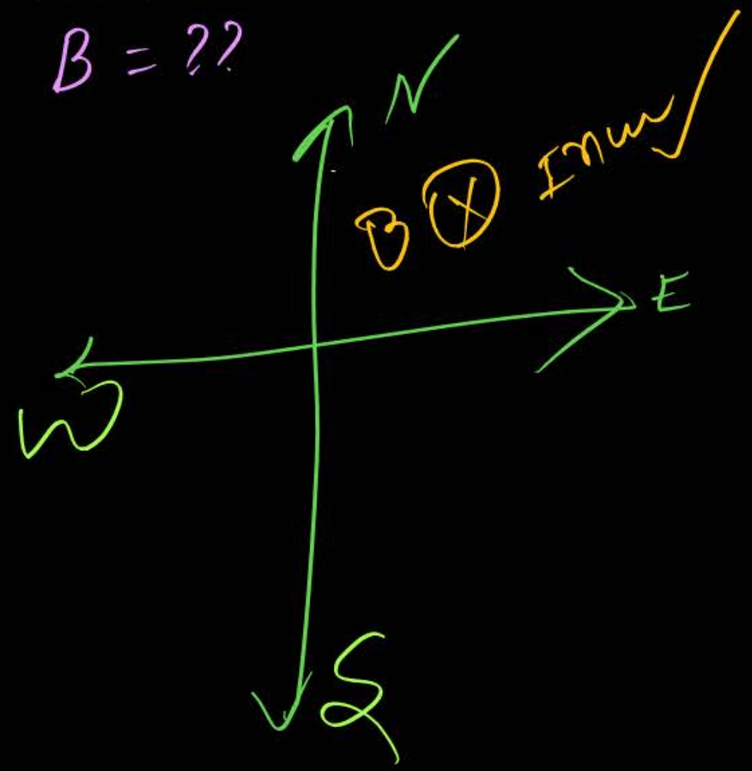


F → ⊙ out

$v \rightarrow$ North

Force $\rightarrow$ West ✓

$B = ??$

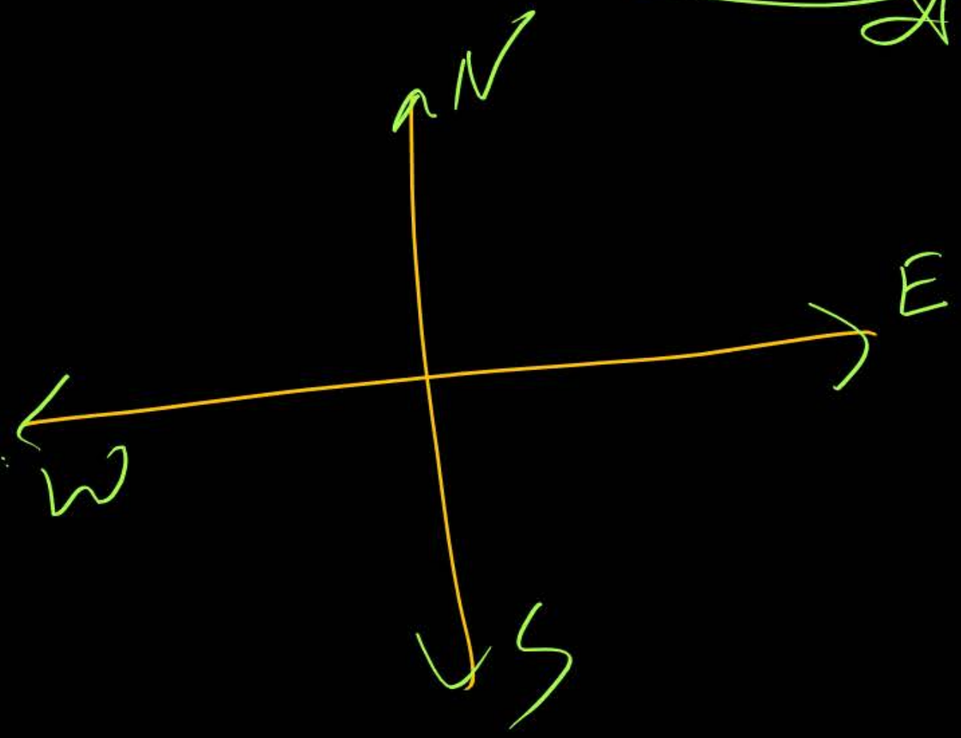


$v \rightarrow ??$

$B \rightarrow$ West ✓

$F =$ South ✓

$v = \odot$ Outward

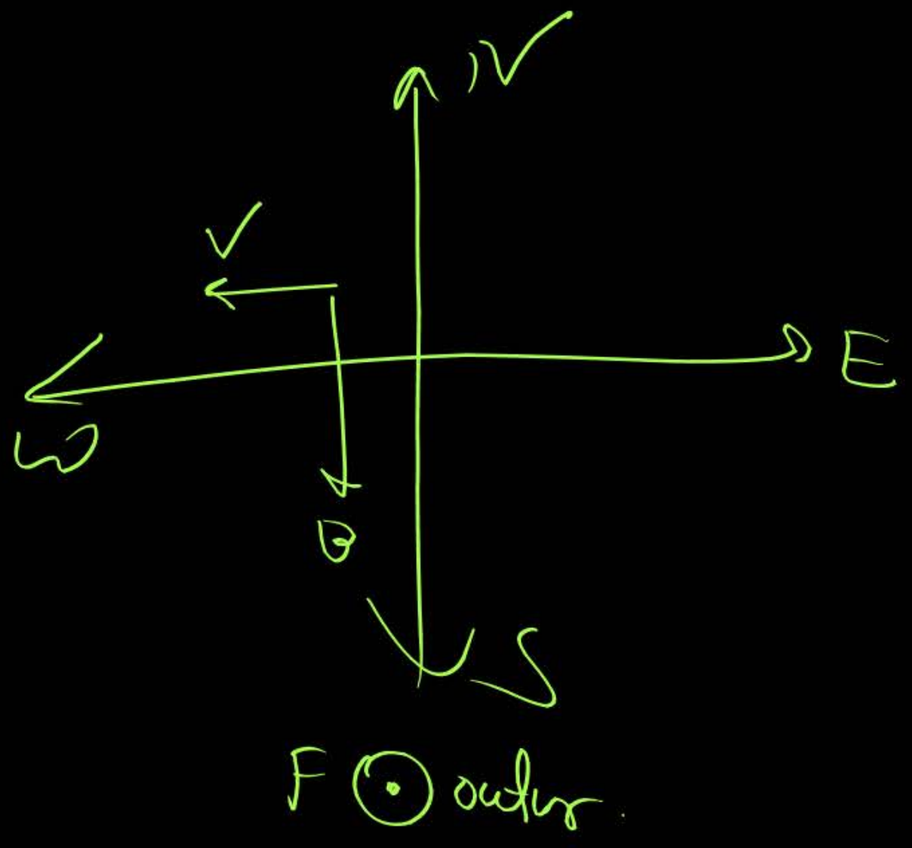


fvcu

$u \rightarrow$ west

$B \rightarrow$ South

$F = ??$



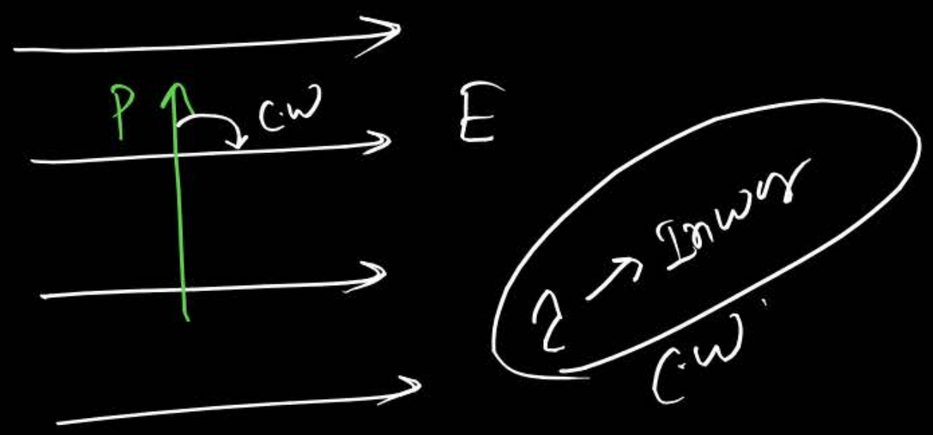
F ⊙ outer.

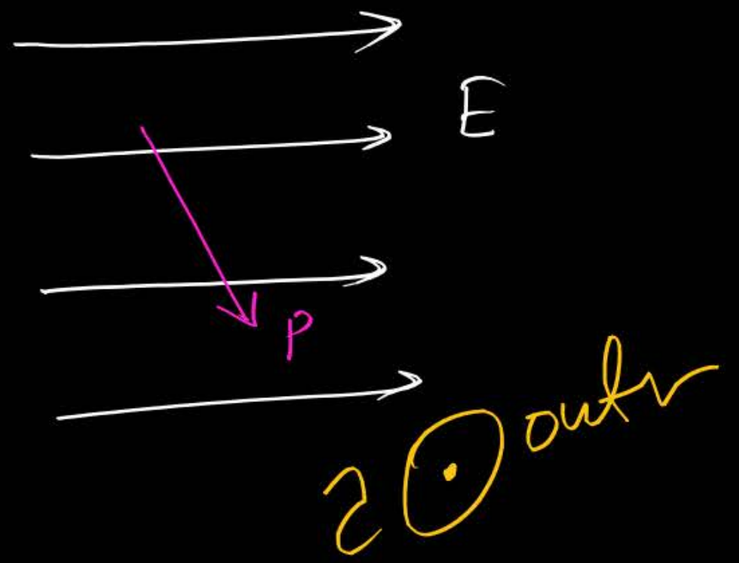
$u \rightarrow$ North

$B \rightarrow$ East

$F = ??$

H/W

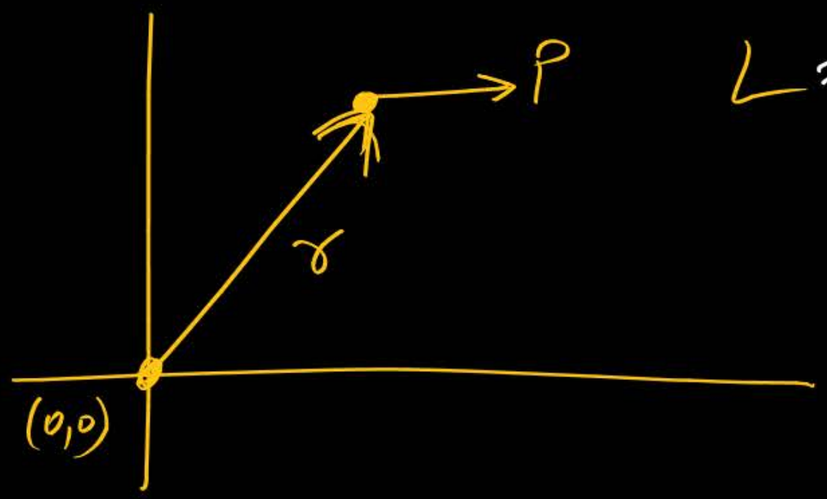




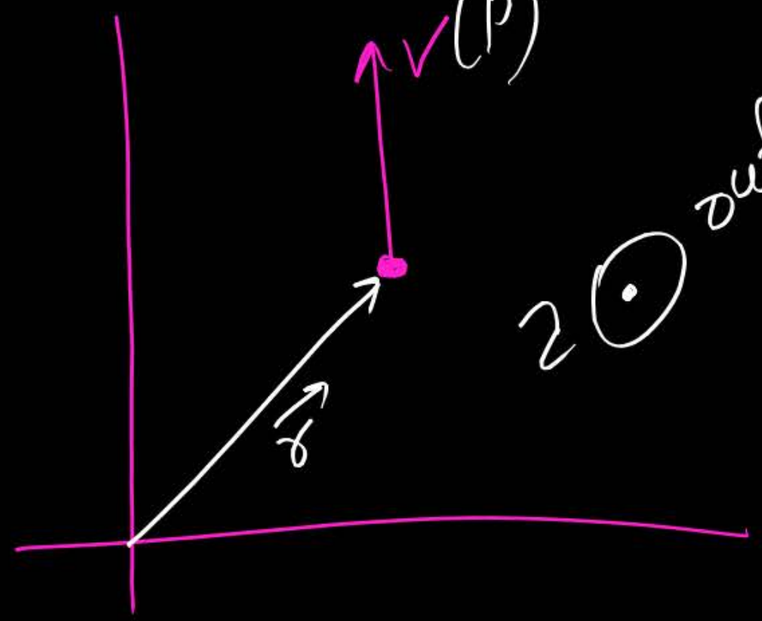
$$\vec{\tau} = \vec{P} \times \vec{E}$$

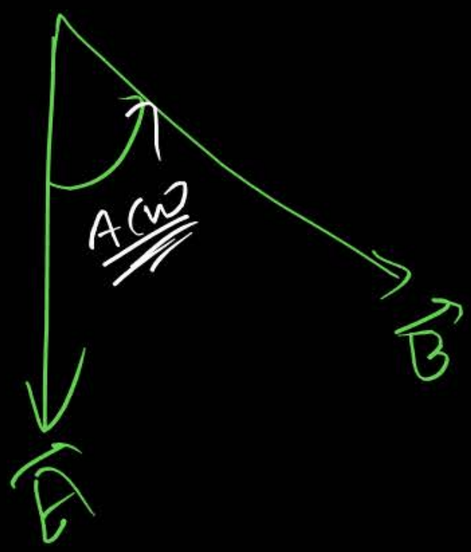
1st Vq 2nd Vq

$$\vec{L} = \vec{r} \times \vec{p}$$



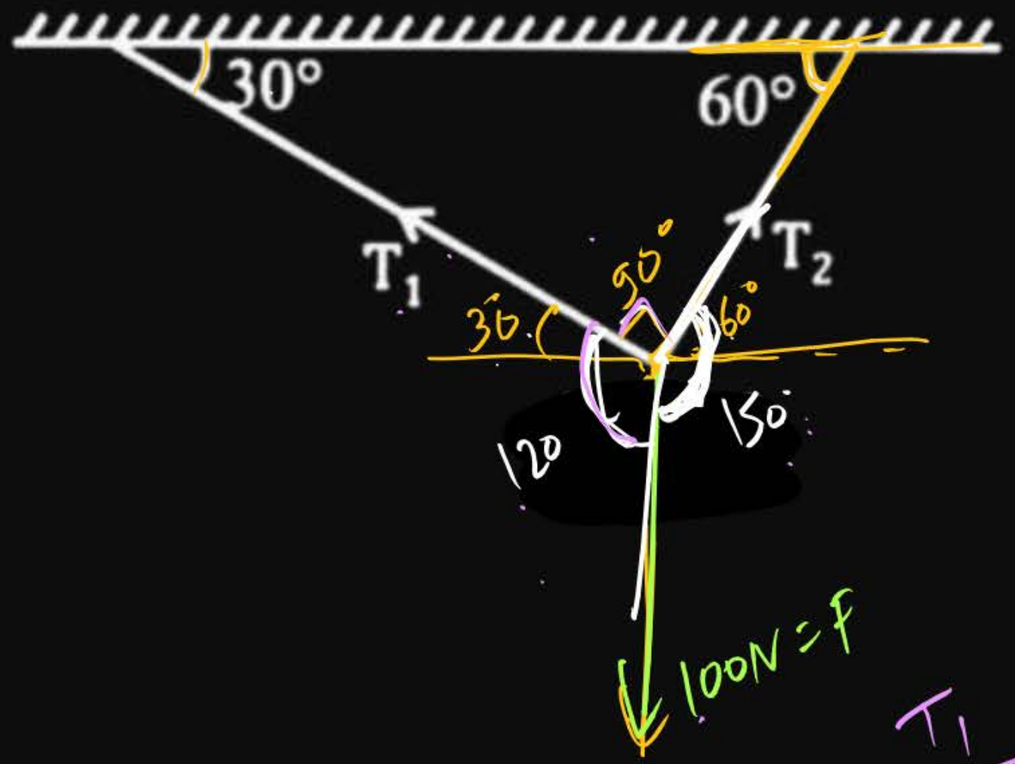
$L = I\omega\hat{k}$ ✓





$\vec{A} \times \vec{B}$ → ⊙ out

Question



$$\frac{100}{\sin 90} = \frac{T_1}{\sin 150}$$

$$\frac{100}{1} = \frac{T_1}{1/2}$$

$T_1 = 50N$


THANK
YOU