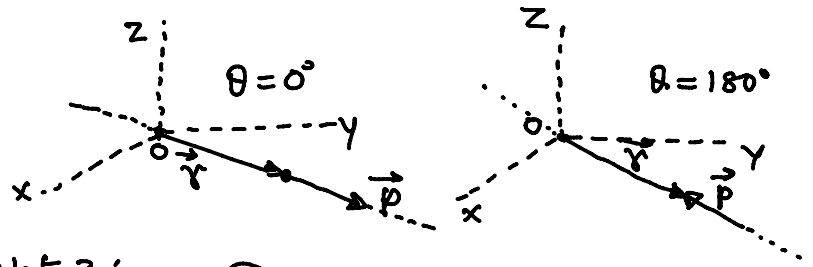
Note2: if $\theta = 0°$ or $180° \Rightarrow \sin\theta = 0$, by Eq ② $|\vec{L}| = 0$



Note3: by ② $|\vec{L}| = |\vec{r}| \cdot (|\vec{p}| \sin\theta) \Rightarrow |\vec{L}| = |\vec{r}| \cdot p_\perp$ —③

Note that '***only the transverse component of momentum is responsible for generation of angular momentum***'. The radial component of momentum has no role in the generation of angular momentum.

Note4: by Eq ② $|\vec{L}| = |\vec{p}|(|\vec{r}|\sin\theta)$

$|\vec{L}| = |\vec{p}| \cdot ON$ —④

ON → lar distance of line of motion of the particle from origin.

$ON = r_\perp$

by Eq ④ $|\vec{L}| = |\vec{p}| \cdot r_\perp$ —⑤