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INTERMEDIATE

Lows of Motion

Hand Notes For JEE Mains, Advance, NEET UG, Class 11 & 12 etc…

Hand Notes

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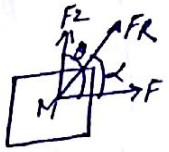
'LAWS OF MOTION'

FORCE

Any type of push or, pull which is tried to change the state of Rest or, uniform motion.

NOTE→ Resultant force on body may change.
* Its shape
* Its direction
* both
* shape of body.

* Force is a vector quantity that's why vector Addition of Indivisuall forces. $\vec{F_R} = \vec{F_1} + \vec{F_2} + \cdots \vec{F_N}$



$N = 2 \Rightarrow \vec{F_R} = \vec{F_1} + \vec{F_2}$

$$|\vec{F_R}| = \sqrt{F_1^2 + F_2^2 + 2F_1F_2\cos\theta}$$

$$\tan\alpha = \frac{F_2\sin\theta}{F_1 + F_2\cos\theta}$$

$F_1 = F_2 = F$

$$F_R = 2F\cos(\theta/2)$$

$$\alpha = \theta/2$$

INERTIA

Property which is maintain the state of Rest or, state of uniform motion.

NOTE→
* Inertia is directelly propersnal to the mass.
* It only depend on mass. It is independent from shape & state of Body.
* Same mass object ⊕nt in different shape represent same Inertia.
* If two same mass object one object ⊕nt in rest & another move with uniformally or, in uniform motion Represent same Inertial.

NEWTON'S IST LAW

External force is Required to change the state or, state of uniform motion.

Newton Ist law explain Inertia of body thats why called Law of Inertial.

Types of Inertia

|a|→ Inertia of Rest → body can't change its state of Rest by its self.
Ex→ If bus suddenly move forward than passenger in bus moving backward.
* Sudden jerk is applied on blanket dust particle removed from it.

|b|→ Inertia of motion → body can't change its state of motion by itself.
Ex→ If bus suddenly stop than passenger moving forward.
* Fast baller transfer its velocity to the ball.

|c|→ Inertial of Direction → Body can't change its direction by its self.
Ex→ * If bus turns Right than passenger in bus moving left or, outward to the centre of circular path than force which is act in outward direction is called centrifugal force.