

Topic

Principle of Linear Impulse and Momentum

Governing Equations and Assumptions

$$m(v_1)_x + \sum \int_{t_1}^{t_2} F_x dt = m(v_2)_x$$

$$m(v_1)_y + \sum \int_{t_1}^{t_2} F_y dt = m(v_2)_y$$

$$m(v_1)_z + \sum \int_{t_1}^{t_2} F_z dt = m(v_2)_z$$

Kinematics

Kinetics ($\vec{F} = m\vec{a}$)

Process

- ① Free Body Diagram if needed
- ② Determine the impulses and momentum
- ③ Apply the Principle of Linear Impulse and Momentum
- ④ Apply Kinematics if needed and solve for the unknowns