

“The Knowledge” FOR MECHANICS MAJOR

The equation for F_{\max} in terms of the coefficient of friction

The meaning of a couple

The definition of Work Done

The Work-Energy Principle (WEP)

The two definitions of Power

The definition of Impulse

The Principle of Impulse

The definition of the coefficient of restitution, its bounds, and the significance of it attaining these bounds

The centre of mass (\bar{x}, \bar{y}) of a uniform lamina

The x-coordinate of the centre of mass of a uniform solid of revolution rotated about the x -axis

The relationship between tangential velocity and angular velocity

The relationship between tangential acceleration and angular acceleration

Two expressions for centripetal acceleration given circular motion

Three different ways of expressing acceleration as a derivative

Tension in a string or spring in terms of stiffness or modulus of elasticity

Elastic potential energy in terms of stiffness or modulus of elasticity

How to find the bounding parabola of a projectile

The differential equation for simple harmonic motion and general solutions

Given simple harmonic motion, the expression for the time period and frequency of oscillations

Given simple harmonic motion, the relationship between velocity and displacement

Given simple harmonic motion, the maximum velocity and maximum acceleration, and where they occur

The (approximate) differential equation for a pendulum given a small angular displacement