PHYS 211X
General Physics I

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Formulas

Motion

Position:

$$s \text{ or } p = \vec{v}\Delta t \tag{1}$$

Velocity:

$$\vec{v} = \vec{a}\Delta t \tag{2}$$

Projectile Motion:

$$y_f = y_0 + v_0(\Delta t) + \frac{1}{2}a(\Delta t^2) \tag{3}$$

Force

Force:

$$\vec{F} = m\vec{a} \tag{4}$$

Friction:

$$f = \mu N \tag{5}$$

Drag:

$$\vec{F_D} \text{ or } D = \frac{1}{2}\rho C_D A v^2 \tag{6}$$

Key

v = velocity, meters/second
y = height, meters
x = distance, meters
t = time, seconds
m = mass, kilograms
a = acceleration, meters/second^2
g = gravity: 9.8meters/second^2
F = force, Newtons, kilogram $\cdot$ meters/second^2
μ = coefficient of friction
N = normal force, Newtons
A = area, meters^2
ρ = volumetric mass density, kilograms/meters^3
C_D = drag coefficient (geometry dependant)