Cheatography

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SI units	
Mass	kg
Distance	m
Time	S
Force	Ν

Prefixes		
Kilo	10^3	
Hecto	10^2	
Deka	10^1	
Deci	10^-1	
Centi	10^-2	
Milli	10^-3	
Nano	10^-9	

Vector Operations

Dot Product	a dot b = sum of vector components multiplied
Cross Products	Determinant of (i j k, x y z, x y z)

Notes





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Notes



1d motion

v_avg = delta x/ delta t

v = dx/dt

displacement is scalar, distance is vector

5 function

d = v * t

v = a * t + v_0

 $x = 1/2 a * t^{2} + v_{0} * t + x_{0}$

v² - v_0² = 2 * a * d

 $x = (v+v_0)t/2$

Vector Notations

$$\begin{split} \vec{v} &= v_x \hat{i} + v_y \hat{j} + v_z \hat{k} = \frac{dx}{dt} \hat{i} + \frac{dy}{dt} \hat{j} + \frac{dz}{dt} \hat{k} \\ \vec{a} &= a_x \hat{i} + a_y \hat{j} + a_z \hat{k} = \frac{dv_x}{dt} \hat{i} + \frac{dv_y}{dt} \hat{j} + \frac{dv_z}{dt} \hat{k} \end{split}$$

Rotational Acceleration

- $a_c = v^2/r$
- T = period

v = 2pir/T

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Newtons Laws

1. If sum forces = 0, no acceleration. At rest stays at rest, motion stays at same speed

2. net force = mass * acceleration

3. if object A pushes on B, (F_ab) then object b exerts equal force on object A (F_ba)

Force

Force is a vector

Net force = sum of all forces

Normal force is from surface on object, perpendicular

friction is from surface on object, parallel to surface

Tension from pulling force

Weight pull of gravity (mg)

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