Equations and Constants

$$\Delta x = x_f - x_i$$

$$\bar{v} = \frac{\Delta x}{\Delta t}$$

$$v_f = v_i + at$$

$$v_f^2 = v_i^2 + 2a\Delta x$$

$$\Delta x = v_i t + \tfrac{1}{2} a t^2$$

$$F = ma$$

$$F_f = \mu F_N$$

$$a_c = \frac{v^2}{r}$$

$$F_c = \frac{mv^2}{r}$$

$$\tau = rF\sin\theta$$

$$F = G\frac{m_1 m_2}{d^2}$$

$$p = mv$$

$$F\Delta t = \Delta p$$

$$KE = \tfrac{1}{2} mv^2$$

$$PE = mgh$$

$$W = F\Delta x\cos\theta$$

$$P = \frac{W}{t} = Fv$$

$$F_q = k_C \frac{q_1 q_2}{r^2}$$

$$E = k_C \frac{q}{r^2} = \frac{F}{q_o}$$

series $R_{eq} = \sum R_n$

parallel $\frac{1}{R_{eq}} = \sum \frac{1}{R_n}$

$$I = \frac{\Delta Q}{\Delta t}$$

$$V = IR$$

$$P = IV$$

$$F_{spring} = -kx$$

$$PE_{spring} = \tfrac{1}{2} kx^2$$

$$T_s = 2\pi\sqrt{\frac{m}{k}}$$

$$T_p = 2\pi\sqrt{\frac{l}{g}}$$

$$T = \frac{1}{f}$$

$$v_{wave} = \lambda f$$

$$G = 6.67\times10^{-11}\ \frac{Nm^2}{kg^2}$$

$$c = 3.00\times10^{8}\ \frac{m}{s}$$

$$g = 9.81\frac{m}{s^2}$$

$$e = 1.6\times10^{-19}\ C$$

$$m_p = 1.67\times10^{-27}\ kg$$

$$m_e = 9.11\times10^{-31}\ kg$$

$$k_C = 9\times10^{9}\ \frac{Nm^2}{C^2}$$

Quadratic Equation

if:

$ax^2 + bx + c = 0$

then:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Symbols:

a = acceleration
F = Force
F_N = Normal Force
g = freefall acceleration
h = height
KE = kinetic energy
k = spring constant
l = length
m = mass
PE = potential energy
P = power
p = momentum
r = radius
T = period
v = velocity
t = time
W = work
x = position
q = charge
Q = total charge
R = resistance
I = current
V = voltage
Δ = change
θ = angle
μ = coefficient of friction
τ = torque
λ = wavelength
f = frequency