Physics I

equations

$R_x = R\cos\theta$ $\quad$ $R_y = R\sin\theta$

$R^2 = R_x^2 + R_y^2$ $\quad$ $\theta = \tan^{-1}(\frac{R_y}{R_x})$

$\bar{v} = \frac{\Delta x}{\Delta t}$ $\quad$ $\bar{a} = \frac{\Delta v}{\Delta t}$ $\quad$ $\vec{p} = m\vec{v}$

for constant a:

$v = v_0 + at$ $\quad$ $x = x_0 + v_0 t + \frac{1}{2}at^2$

$v^2 = v_0^2 + 2a(x - x_0)$ $\quad$ $\bar{v} = \frac{1}{2}(v_0 + v)$

$\sum \vec{F} = m\vec{a} = \frac{\Delta \vec{p}}{\Delta t}$ $\quad$ $F_g = mg$

$F_{fr} = \mu_s F_N$ or $\mu_k F_N$ $\quad$ $a_c = \frac{v^2}{R}$

$F_G = G\frac{m_1 m_2}{r^2}$ $\quad$ $\vec{F}_s = -k\vec{x}$

$W = Fd\sin\theta$ $\quad$ $K.E. = \frac{1}{2}mv^2$

potential energies:

$PE_g = mgh$ $\quad$ $PE_s(x) = \frac{1}{2}kx^2$

$\bar{P} = \frac{\Delta E}{\Delta t}$ $\quad$ $\tau = RF\sin\theta$

Constants:

g = 9.81 m/s^2 $\quad$ G=6.7×10^{-11} $\mathrm{Nm^2/kg^2}$

$M_{earth} = 5.98 \times 10^{24}$ kg $\quad$ R_{earth} = 6,398 km