Equations Summary

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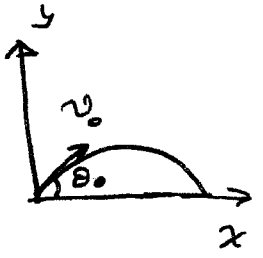
1) Equations (x-motion)

Equations (x-motion)	x	v_x	a_x	t
$v_x = v_{ox} + a_x t$	no	yes	yes	yes
$x = x_o + v_{ox} t + \frac{1}{2} a_x t^2$	yes	no	yes	yes
$x = x_o + \frac{1}{2}(v_x + v_{ox}) t$	yes	yes	no	yes
$v_x^2 = v_{ox}^2 + 2a_x(x - x_o)$	yes	yes	yes	no

2) Equations (freefall)

Equations (freefall)	y	v_y	t
$v_y = v_{oy} - gt$	no	no	yes
$y = y_o + v_{oy} t - \frac{1}{2} g t^2$	yes	yes	yes
$y = y_o + \frac{1}{2}(v_y + v_{oy}) t$	yes	yes	yes
$v_y^2 = v_{oy}^2 - 2g(y - y_o)$	yes	yes	no

position at any time $\left\{ \begin{array}{l} x(t) = v_{ox} t \\ y(t) = v_{oy} t - \frac{1}{2} g t^2 + y_o \end{array} \right\}$



Compo Velocity at any time $\left\{ \begin{array}{l} v_x = v_{ox} \\ v_y = v_{oy} - gt \end{array} \right\}$

$\left\{ \begin{array}{l} v_{ox} = v_o \cos\theta_o \\ v_{oy} = v_o \sin\theta_o \end{array} \right\}$

height as a function of x $\left\{ y(x) = \frac{v_{oy}}{v_{ox}} x - \frac{1}{2} \frac{g}{v_{ox}^2} x^2 + y_o \right\}$

time to reach maximum height $\left\{ t = \frac{v_{oy}}{g} \right\}$

maximum height $\left\{ y = \frac{v_{oy}^2}{2g} \right\}$

$\left\{ \text{Range} = x = \frac{2 v_{ox} v_{oy}}{g} \right\}$