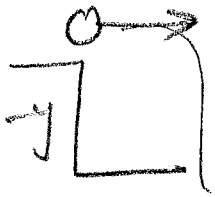


# Honors Physics Formula Sheet

## Projectiles

Case I

$$V_0 \theta = 0$$



$$V_{0x} = V_x$$

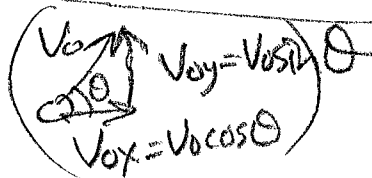
$$x = V_{0x}(t)$$

$$V_y = -9.81(t)$$

$$-y = -4.905(t^2)$$

$$V_y^2 = 2(-9.81)(-y)$$

Case II



$$V_{0x} = V_x$$

$$x = V_0 \cos \theta (t)$$

$$V_y = V_0 \sin \theta - 9.81(t)$$

$$-y = V_0 \sin \theta (t) - 4.905(t^2)$$

$$V_y^2 - (V_0 \sin \theta)^2 = 2(-9.81)(-y)$$

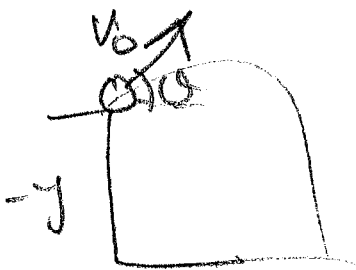
$$\left( \tan \theta = \frac{y}{x} \right)$$

$$X = \frac{V_0^2 \sin 2\theta}{9.81}$$

$$t = \frac{2 V_0 \sin \theta}{9.81}$$

$$y_{\max} = \frac{(V_0 \sin \theta)^2}{2(9.81)}$$

Case III



①  $-y = V_0 \sin \theta (t) - 4.905(t^2)$  solve for  $t$

②  $V_y = V_0 \sin \theta - 9.81(t)$

③  $x = V_0 \cos \theta (t)$

