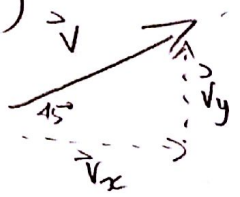
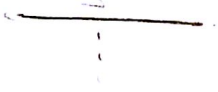
#5.)



$\vec{V}_x \tan 45° = \vec{V}_y$ $\times \frac{\vec{V}_x}{\vec{V}_x}$



① $\vec{V}_x \tan 45° = \vec{V}_y$

② $+ \times \vec{V}_x = \frac{\vec{d}_x}{t} \times t$

$+ \times \frac{\vec{V}_x}{\vec{V}_x} = \frac{\vec{d}_x}{\vec{V}_x}$

$t = \frac{\vec{d}_x}{\vec{V}_x}$

EQUAL EACH OTHER

③ $\vec{d}_y = \vec{V}_{oy} t + \frac{1}{2} \vec{a}_y t^2$

$0 = (\vec{V}_x \tan 45°)(t) - 4.905(t^2)$

$(V_x \tan 45°)(t) \quad -(V_x \tan 45°)(t)$

$-(\vec{V}_x \tan 45°)(t) = -4.905(t^2)$

$\frac{-(\vec{V}_x \tan 45°)(t)}{t} = \frac{-4.905(t^2)}{t}$

$+\vec{V}_x \tan 45 = -4.905 +$

$+4.905 \qquad -4.905$

$t = \frac{\vec{V}_x \tan 45°}{4.905}$

④ $\vec{V}_x \times \frac{\vec{V}_x \tan 45°}{4.905} = \frac{+10.0}{\vec{V}_x} \times \vec{V}_x$

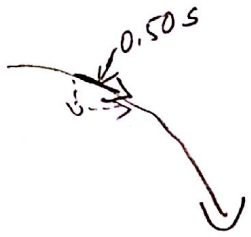
$4.905 \times \frac{\vec{V}_x^2 \tan 45°}{4.905} = +10.0 \times 4.905$

$\frac{\vec{V}_x \tan 45°}{\tan 45°} = \frac{+49.05}{\tan 45°}$

$\vec{V}_x = \sqrt{\frac{+49.05}{\tan 45°}}$ $\quad \vec{V}_x = 7.00357 \text{ m/s}$

$\vec{V}_{TOTAL} \Rightarrow \cos 45° = \frac{7.00357}{\vec{V}}$

$\vec{V} = 9.9045 \text{ m/s}$

#6.) 

TYPE I

$\vec{V}_{oy} = 0$ m/s

$\vec{V}_x = 3.0$ m/s

$\vec{d}_y = -10.0$ m

$\vec{a}_y = -9.81$ m/s^2

① $\vec{d}_y = \vec{V}_{oy}t + \frac{1}{2}\vec{a}_y t^2$

$\frac{-10.0}{-4.905} = \frac{(-4.905)(t^2)}{-4.905}$

$t^2 = \sqrt{\frac{10.0}{4.905}}$

$t = 1.427843$ s

② $\vec{V}_{Fy} = \vec{V}_{oy} + \vec{a}_y t$

$\vec{V}_{Fy} = 0 + (-9.81)(1.427843)$

$\vec{V}_{Fy} = -14.00714$ m/s.

③ $a^2 + b^2 = h^2$

$(-14)^2 + (3)^2 = h^2$

$h = 14.32$ m/s.

④ $\tan\theta = \frac{3}{14}$

$\theta = 12.08877°$

$\vec{V}_T = 14.3$ m/s at $12.1°$ above vertical