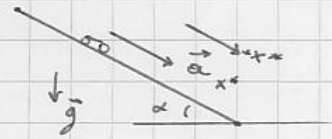
(3.8)

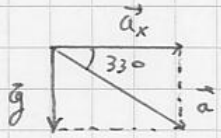
a). On choisit un axe x^* particulier, parallèle au plan



Selon cet axe, $v_f^2 = v_i^2 + 2a\Delta x^* = 2a\Delta x^*$

$$\Rightarrow a = \frac{v_f^2}{2\Delta x^*} = \frac{7,7^2}{24} \simeq \underline{\underline{2,47\ m/s^2}}$$

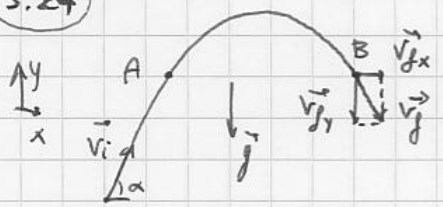
b). La composante verticale vaut $\vec{g}$! On cherche a_x



$$\cos 33 = \frac{a_x}{a}$$

$$\Rightarrow a_x = a \cos 33° = \underline{\underline{2,07\ m/s^2}}$$

(3.24)



La balle doit tomber dans le trou $\Rightarrow$ trajectoire descendante ! (point B)

a). temps de vol

$$\Delta y = y_f - y_i = 6 = -\frac{1}{2} g t^2 + v_i \sin\alpha\, t$$

$$4,9t^2 - 43\sin 40° t + 6 = 0$$

$$t'' = \frac{43\sin 40° \pm \sqrt{(43\sin 40)^2 - 24.4,9}}{9,8} \overset{(A)}{=} \begin{cases} \nearrow \underline{5,4s} & (B) \\ \searrow 0,226s & (A) \end{cases}$$

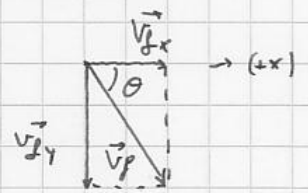
b). intensité

Il faut trouver d'abord v_{fx} et v_{fy}.

- $v_{fx} = v_{ix}$ (MRU horizontal) $\Rightarrow v_{fx} = 43\cos 40° \simeq 32,94\ m/s$
- $-9,8 = \frac{v_{fy} - v_{iy}}{t} \Rightarrow v_{fy} - v_{iy} = -9,8t \Rightarrow v_{fy} = v_{iy} - 9,8t = 43\sin 40 - 9,8.t \simeq -25,28\ m/s$

$$\Rightarrow v_f = \sqrt{v_{fy}^2 + v_{fx}^2} \simeq \underline{\underline{41,5\ m/s}}$$

c). direction



$$\theta = \text{Arctg}\left(\frac{v_{fy}}{v_{fx}}\right) \simeq \underline{\underline{-37,5°}}$$ par rapport à $+x$

ou sous l'horizontale !