

~~1. 10/18~~

Correction type (Opérations Aériennes)

Ex 1

- $C_c = 108^\circ$  (1)
- $C_m = 111^\circ$  (1)
- $C_v = 105^\circ$  (1)
- $Z_c = 253^\circ$  (1)
- $Z_m = 256^\circ$  (1)
- $Z_v = 250^\circ$  (1)

$\frac{D_m}{V}$	$M$	$\frac{d}{C}$	$C$
$098^\circ$	$104^\circ$		
$105^\circ$	$111^\circ$	$108^\circ$	
$250^\circ$	$256^\circ$	$253^\circ$	
			$R \uparrow 29^\circ$
			$C \downarrow 145^\circ$
			$Z$

Ex 2

Paris (48°51'N 02°30'E) - New-York (40°50'N 074°00'W)

$\gamma_V = \frac{g}{lc}$  La route vraie

$g = 74^\circ + 2^\circ 30' = 76^\circ 30'$

$g = 4590'$

$lc_{48^\circ} = 3382,1'$   $lc_{40^\circ 50'} = 2688,4'$

$lc = 693,7'$

$\gamma_V = \frac{4590'}{693,7'} \Rightarrow v = 81,4^\circ \approx 81^\circ$  (1)

donc  $R_v = 180 + 81 \Rightarrow R_v = 261^\circ$  (1)

\* la distance leucodromique :

$m = \frac{l}{\cos v}$  ,  $l = 49^\circ - 40^\circ 50' = 8^\circ 10' = 490'$

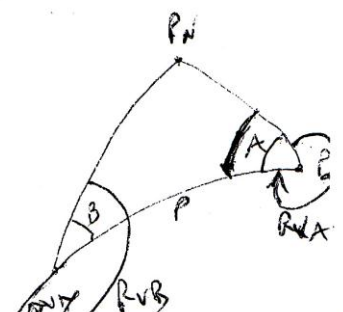
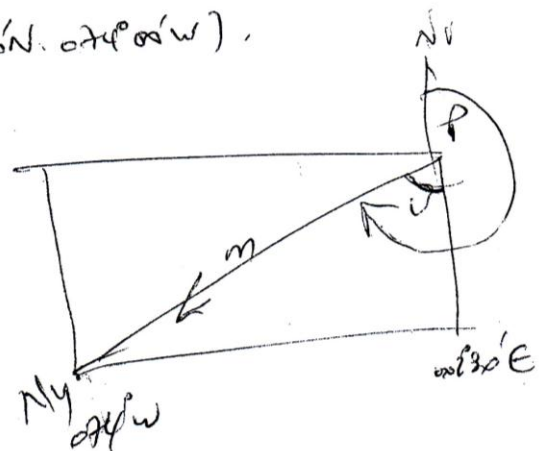
$m = \frac{490}{\cos 81,4^\circ} \Rightarrow m = 3279 \text{ NM}$  (1)

\* la distance orthodromique :

$\cos p = \sin 49^\circ \sin 40^\circ 50' + \cos 49^\circ \cos 40^\circ 50' \cos 76^\circ 30'$

$\cos p = 0,609 \Rightarrow p = 52,46^\circ = 52^\circ 27' = 3147'$

$\Rightarrow P = 3147 \text{ NM}$  (1)



\* Les routes vraies départ et arrivée:

$$\sin A = \frac{\sin 76,5^\circ}{\sin 82,46^\circ} \times \cos 40'50'' = 1,226 \times 0,757 = 0,928$$

$$\Rightarrow A = 68,1^\circ \Rightarrow R_{VA} = 360^\circ - 68,1^\circ \Rightarrow \boxed{R_{VA} = 291,9^\circ} \text{ (1)}$$

$$\sin B = \frac{\sin 76,5^\circ}{\sin 82,46^\circ} \times \cos 49^\circ = 1,226 \times 0,656 = 0,804$$

$$\Rightarrow B = 53,6^\circ \Rightarrow R_{VB} = 180^\circ + 53,6^\circ \Rightarrow \boxed{R_{VB} = 233,6^\circ} \text{ (1)}$$

Ex 3:

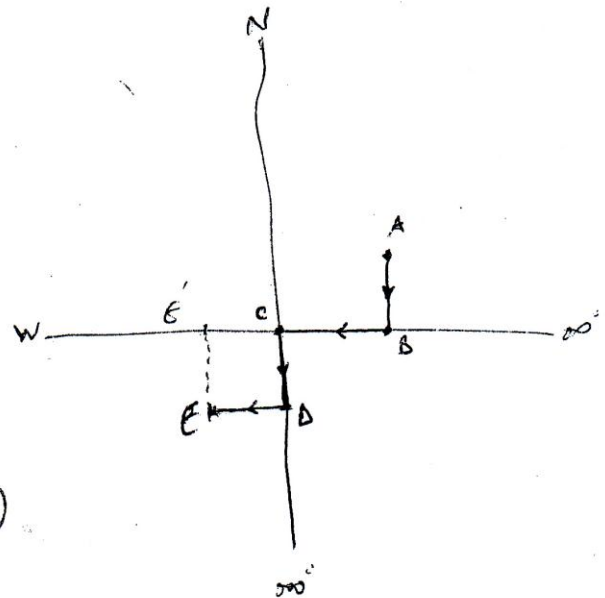
- \* B (00°N 018°E) (1)
- C (00°N 000°E) (1)
- D (09°S 000°E) (1)
- E (09°S 013°40'05'') (1)

\* Distances:

$$A \text{ et } B: 9^\circ \times 60 = 540' = 540 \text{ NM (1)}$$

$$B \text{ et } C: 18^\circ \times 60 = 1080' = 1080 \text{ NM (1)}$$

$$D \text{ et } E: 1 \text{ heure } 30 \text{ min} = 540 + 270 = 810 \text{ NM (1)}$$



\* L' avion arrive à la destination E à 15<sup>H</sup>00 (1)

$$DE = CE \cos L_D \Rightarrow CE = \frac{DE}{\cos L_D} \Rightarrow CE = \frac{810'}{\cos 9^\circ} = 820' = 13^\circ 40' 05''$$

$$\Rightarrow E (09^\circ S \ 013^\circ 40' 05'' W)$$

$$\Rightarrow CE = \frac{DE}{\cos 9^\circ} = \frac{810}{\cos 9^\circ} = 820' = 13^\circ 40' 05''$$