B

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A

o

الشكل 4

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VB

VA

ω

P

45°

45°

90°

$$OA=20cm$$

$$ω\_{0}=10\left(sec\right)^{-1}$$

$$AB=100cm$$

$$ϕ=θ=45°$$

$$V\_{A}=ω\_{OA}\*OA=10\*20=200cm/sec$$

Equiprojectivite des vitesse (civ)

$$V\_{A}=V\_{B}\cos(\left(45°\right))$$

$$200=V\_{B}\frac{\sqrt{2}}{2}=\frac{V\_{B}}{\sqrt{2}}$$

$$V\_{B}=200\*\sqrt{2}=141.42cm/sec$$

autre methode

d’apres le schema on a

$$∆BAP$$

$$AP=BP⇒BP^{2}=AP^{2}+AP^{2}=\sqrt{2AP^{2}}$$

$$BP=AP\sqrt{2}$$

$$\frac{V\_{A}}{AP}=\frac{V\_{B}}{BP}=ω\_{AB}$$

$$\frac{V\_{A}}{AP}=\frac{V\_{B}}{AP\*\sqrt{2}}$$

$$V\_{B}=\sqrt{2}\*V\_{A}=141.42cm/sec$$

$$V\_{A}=ω\_{AB}\*AP$$

$$ω\_{AB}=\frac{V\_{A}}{AP}=\frac{V\_{A}}{AB}=\frac{200}{100}=2 sec^{-1}$$

$$\vec{w}\_{B}=\vec{w}\_{A}+\vec{w}\_{BA}=\vec{w^{τ}}\_{A}+\vec{w^{n}}\_{A}+\vec{w^{τ}}\_{BA}+\vec{w^{n}}\_{BA}$$

$$ε\_{0}=\frac{dω\_{0}}{dt}=\frac{d(10)}{dt}=0 \left(sec\right)^{-1}, w\_{A}^{τ}=0$$

Projection sur l'axe ox

$$w\_{B}\*\cos((45°))=-w\_{A}^{n}+w\_{BA}^{τ}…….\left(1\right) $$

Projection sur l'axe oy

$$w\_{B}\*\sin((45°))=-w\_{BA}^{n}….…….\left(2\right) $$

$$w\_{A}^{n}=ω\_{OA}^{2}\*OA=10^{2}\*20=2000cm/sec^{2}$$

$$w\_{BA}^{n}=ω\_{AB}^{2}\*AB=2^{2}\*100=400cm/sec^{2}$$

$$\left(2\right)⇒w\_{B}\sin((45°))=-w\_{BA}^{n}.⟹w\_{B}=\frac{-ω\_{AB}^{2}\*AB}{\sin((45°))}=\frac{-4\*100}{\sin((45°))}=\frac{-400}{\sin((45°))} =-400\*\sqrt{2} cm/sec^{2}$$

$$\left(1\right) ⇒w\_{B}\*\cos((45°))=-2000+ε\_{AB}\*AB$$

$$ε\_{AB}=\frac{\left(w\_{B}\cos(\left(45°\right)+2000)\right)}{100}=16sec^{-2}$$