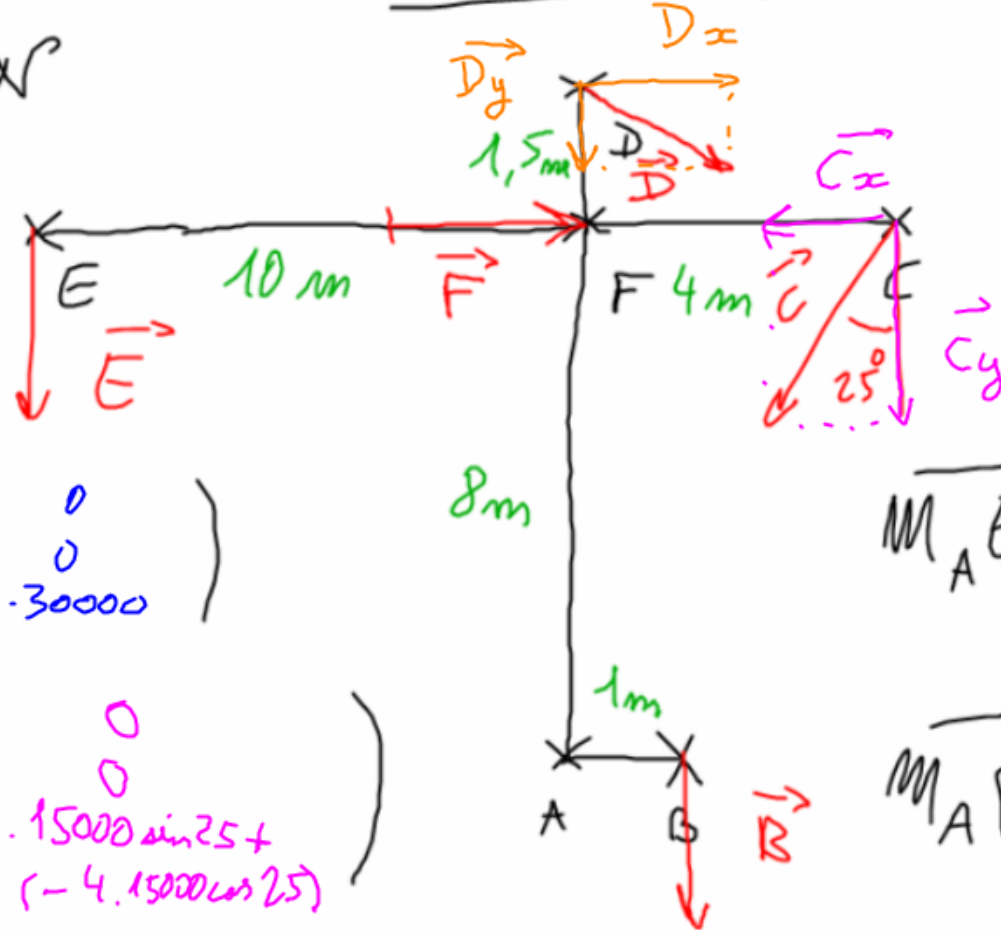


$$\|\vec{B}\| = 30000 \text{ N}$$

$$\|\vec{E}\| = 1000 \text{ N}$$

$$\|\vec{F}\| = 200 \text{ N}$$

Pour lundi:



$$\|\vec{C}\| = 15000 \text{ N}$$

$$\vec{C} = \begin{pmatrix} -15000 \sin 25 \\ -15000 \cos 25 \\ 0 \end{pmatrix}^{1/5}$$

$$\vec{D} = \begin{pmatrix} 8000 \\ -4000 \\ 0 \end{pmatrix}$$

$$\|\vec{D}\| = \sqrt{8000^2 + 4000^2} \approx 8940 \text{ N}$$

$$\vec{M}_A B = \begin{pmatrix} 0 \\ 0 \\ -1 \cdot 30000 \end{pmatrix}$$

$$\vec{M}_A C = \begin{pmatrix} 0 \\ 0 \\ 8 \cdot 15000 \sin 25 + (-4 \cdot 15000 \cos 25) \end{pmatrix}$$

$$\vec{M}_A D = \begin{pmatrix} 0 \\ 0 \\ -9.5 \cdot 8000 + 0 \end{pmatrix}$$

$$\vec{M}_A E = \begin{pmatrix} 0 \\ 0 \\ 10 \cdot 1000 \end{pmatrix}$$

$$\vec{M}_A F = \begin{pmatrix} 0 \\ 0 \\ -8 \cdot 200 \end{pmatrix}$$

$$\|\vec{B}\| = 30000 \text{ N}$$

$$\|\vec{E}\| = 1000 \text{ N}$$

$$\|\vec{F}\| = 200 \text{ N}$$

Pour lundi:

$$\|\vec{C}\| = 15000 \text{ N}$$

$$\vec{C} = \begin{pmatrix} -15000 \sin 25 \\ -15000 \cos 25 \\ 0 \end{pmatrix}$$

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$$\|\vec{D}\| = \sqrt{8000^2 + 4000^2} \approx 8940 \text{ N}$$

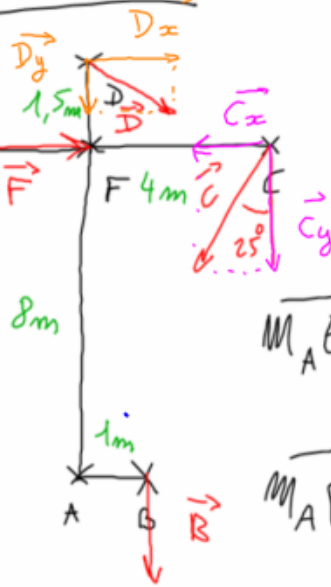
$$\vec{M}_A \vec{E} = \begin{pmatrix} 0 \\ 0 \\ 10 \cdot 1000 \end{pmatrix}$$

$$\vec{M}_A \vec{F} = \begin{pmatrix} 0 \\ 0 \\ -8 \cdot 200 \end{pmatrix}$$

$$\vec{M}_A \vec{B} = \begin{pmatrix} 0 \\ 0 \\ -1 \cdot 30000 \end{pmatrix}$$

$$\vec{M}_A \vec{C} = \begin{pmatrix} 0 \\ 0 \\ 8 \cdot 15000 \sin 25 + (-4 \cdot 15000 \cos 25) \end{pmatrix}$$

$$\vec{M}_A \vec{D} = \begin{pmatrix} 0 \\ 0 \\ -9,5 \cdot 8000 + 0 \end{pmatrix}$$



BABAR

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$$\vec{M}_B \vec{A} = \vec{M}_A \vec{A} + \vec{BA} \wedge \vec{R}$$

$$\vec{M}_A \vec{D} = \vec{M}_D \vec{D} + \vec{AD} \wedge \vec{D}$$

$$= \vec{0} + \begin{pmatrix} 0 \\ 9,5 \\ 0 \end{pmatrix} \wedge \begin{pmatrix} 8000 \\ -4000 \\ 0 \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \\ -9,5 \cdot 8000 \end{pmatrix}$$

$$\begin{aligned} \vec{BA} \wedge \vec{R} &= \vec{R} \wedge \vec{AB} \\ &= -\vec{R} \wedge \vec{BA} \\ &= -\vec{AB} \wedge \vec{R} \end{aligned}$$

$$\|\vec{B}\| = 30000 \text{ N}$$

$$\|\vec{E}\| = 1000 \text{ N}$$

$$\|\vec{F}\| = 200 \text{ N}$$

Pour lundi:

$$\|\vec{C}\| = 15000 \text{ N}$$

$$\vec{C} = \begin{pmatrix} -15000 \sin 25 \\ -15000 \cos 25 \\ 0 \end{pmatrix}$$

$$\vec{D} = \begin{pmatrix} 8000 \\ -4000 \\ 0 \end{pmatrix}$$

$$\|\vec{D}\| = \sqrt{8000^2 + 4000^2} \approx 8940 \text{ N}$$

$$\vec{M}_A \vec{E} = \begin{pmatrix} 0 \\ 0 \\ 10 \cdot 1000 \end{pmatrix}$$

$$\vec{M}_A \vec{F} = \begin{pmatrix} 0 \\ 0 \\ -8 \cdot 200 \end{pmatrix}$$

$$\vec{M}_A \vec{B} = \begin{pmatrix} 0 \\ 0 \\ -1 \cdot 30000 \end{pmatrix}$$

$$\vec{M}_A \vec{C} = \begin{pmatrix} 0 \\ 0 \\ 8 \cdot 15000 \sin 25 + (-4 \cdot 15000 \cos 25) \end{pmatrix}$$

$$\vec{M}_A \vec{D} = \begin{pmatrix} 0 \\ 0 \\ -9 \cdot 15000 + 0 \end{pmatrix}$$

$$\vec{AC} \wedge \vec{C}$$

$$= (4\vec{x} + 8\vec{y}) \wedge (-15000(\sin 25\vec{x} + \cos 25\vec{y}))$$

$$= -15000 \left(4 \cdot \cos 25 \cdot \underbrace{\vec{x} \wedge \vec{y}}_{=\vec{z}} + 8 \cdot \sin 25 \cdot \underbrace{\vec{y} \wedge \vec{x}}_{=-\vec{z}} \right)$$

BABAR

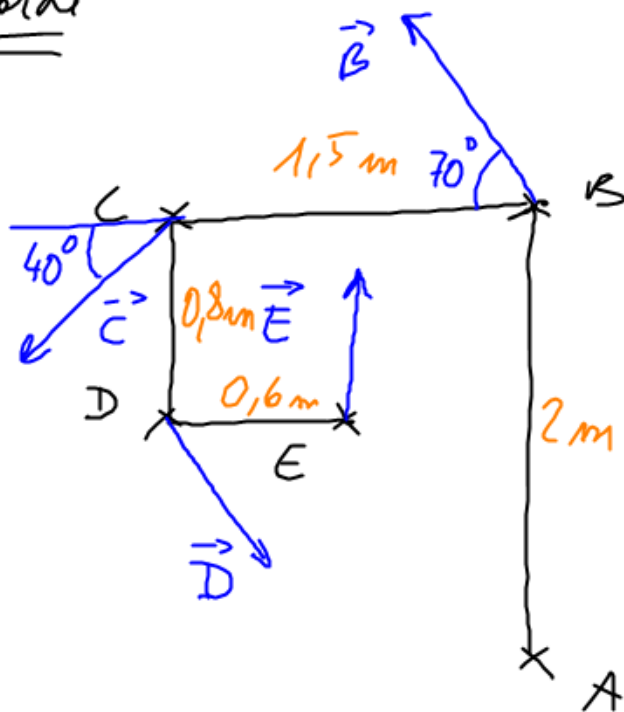
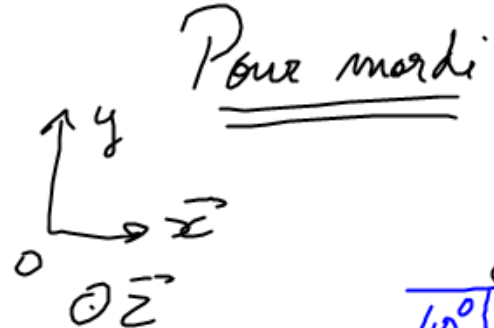
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$$\vec{M}_B \vec{A} = \vec{M}_A \vec{A} + \vec{BA} \wedge \vec{R}$$

$$\vec{M}_A \vec{C} = \vec{M}_C \vec{C} + \vec{AC} \wedge \vec{C}$$

$$= \vec{0} + \begin{pmatrix} 4 \\ 8 \\ 0 \\ 0 \end{pmatrix} \wedge \begin{pmatrix} -15000 \sin 25 \\ -15000 \cos 25 \\ 0 \end{pmatrix}$$

$$= \begin{pmatrix} 0 \\ 0 \\ -15000 \cos 25 \cdot 4 + 15000 \sin 25 \cdot 8 \end{pmatrix}$$



$$\|\vec{B}\| = 2000 \text{ N} \quad \|\vec{E}\| = 1500 \text{ N}$$

$$\vec{C} = \begin{pmatrix} \dots \\ -1000 \\ \dots \end{pmatrix} \quad \|\vec{C}\| =$$

$$\vec{D} = \begin{pmatrix} 800 \\ -900 \\ 0 \end{pmatrix} \quad \|\vec{D}\| =$$

$$\vec{M}_A B =$$

$$\vec{M}_A D =$$

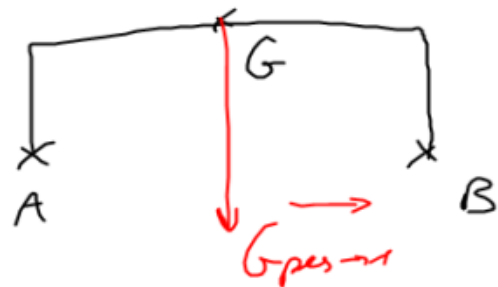
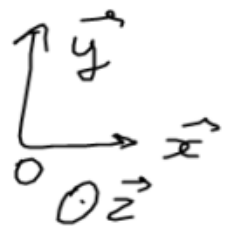
$$\vec{M}_A C =$$

$$\vec{M}_A E =$$

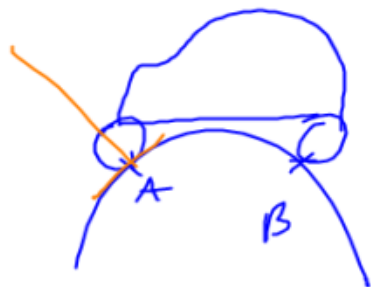
$$\|\vec{M}_A B\| =$$

$$\|\vec{M}_A C\| =$$

$$\|\vec{M}_A D\| =$$

1) SI: 1

$$\| \vec{G}_{\text{per} \rightarrow 1} \| = m \cdot g = (473 + 200) \cdot 9,81 \\ \approx 6602 \text{ N}$$

2) BAME

$$\vec{G}_{\text{per} \rightarrow 1} = \begin{pmatrix} 0 \\ -6602 \\ 0 \end{pmatrix}$$

$$\vec{A}_{0 \rightarrow 1} = \begin{pmatrix} 0 \\ Y_A \\ 0 \end{pmatrix}$$

$$\vec{B}_{0 \rightarrow 1} = \begin{pmatrix} 0 \\ Y_B \\ 0 \end{pmatrix}$$

$$3) \text{ PFS: } \sum \vec{F} = \vec{0} : \quad \sum \vec{F} \cdot \vec{y} = 0 : -6602 + Y_A + Y_B = 0$$

$$\sum \vec{M}_A \vec{F} = \vec{0} :$$

$$M_A \vec{A} + M_A \vec{B} + M_A \vec{G} = \vec{0}$$

$$\vec{0} + \begin{pmatrix} \quad \end{pmatrix} + \begin{pmatrix} \quad \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix}$$