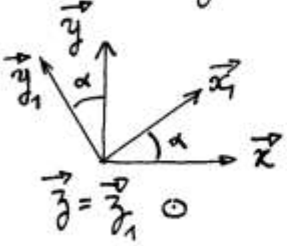
Calculez les produits vectoriels suivants : les $(\vec{x}_i, \vec{y}_i, \vec{z}_i)$ sont des bases orthonormées directes.

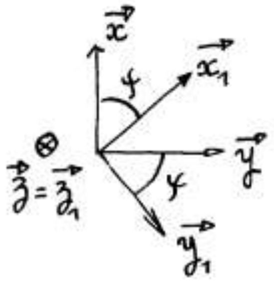


$\vec{x} \wedge \vec{x}_1 =$

$\vec{z} \wedge \vec{y}_1 =$

$\vec{y} \wedge \vec{x}_1 =$

$\vec{x} \wedge \vec{y}_1 =$

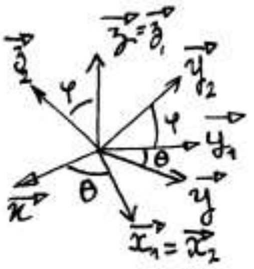


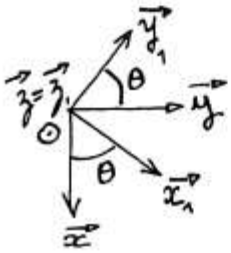
$\vec{x} \wedge \vec{z} =$

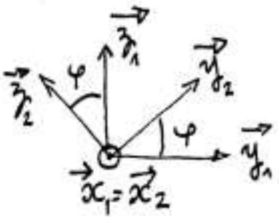
$\vec{x}_1 \wedge \vec{y} =$

$\vec{x} \wedge \vec{y}_1 =$

$\vec{y}_1 \wedge \vec{z} =$







$\vec{x}_1 \wedge \vec{z}_2 =$	$\vec{x}_1 \wedge \vec{y} =$	$\vec{z} \wedge \vec{z}_2$
$\vec{y}_1 \wedge \vec{y}_2 =$	$\vec{x} \wedge \vec{y}_1 =$	
$\vec{y}_1 \wedge \vec{z}_2 =$	$\vec{z}_1 \wedge \vec{y}_2 =$	

et : $\vec{y} \wedge \vec{z}_2$

$\vec{x} \wedge \vec{x}_1 = \sin\alpha\, \vec{z}$; $\vec{z} \wedge \vec{y}_1 = -\vec{x}_1$; $\vec{y} \wedge \vec{x}_1 = -\cos\alpha\, \vec{z}$; $\vec{x} \wedge \vec{y}_1 = \cos\alpha\, \vec{z}$

$\vec{x} \wedge \vec{z} = -\vec{y}$; $\vec{x}_1 \wedge \vec{y} = \cos\varphi\, \vec{z}$; $\vec{x} \wedge \vec{y}_1 = \cos\varphi\, \vec{z}$; $\vec{y}_1 \wedge \vec{z} = \vec{x}_1$.

$\vec{x}_1 \wedge \vec{z}_2 = -\vec{y}_2$; $\vec{y}_1 \wedge \vec{y}_2 = \sin\varphi\, \vec{x}_1$; $\vec{y}_1 \wedge \vec{z}_2 = \cos\varphi\, \vec{x}_1$; $\vec{x}_1 \wedge \vec{y} = \cos\theta\, \vec{z}$

$\vec{x} \wedge \vec{y}_1 = \cos\theta\, \vec{z}$; $\vec{z}_1 \wedge \vec{y}_2 = -\cos\varphi\, \vec{x}_1$; $\vec{z} \wedge \vec{z}_2 = \sin\varphi\, \vec{x}_1$

$\vec{y} \wedge \vec{z}_2 = (\cos\theta\, \vec{y}_1 + \sin\theta\, \vec{x}_1) \wedge \vec{z}_2 = \cos\theta\cos\varphi\, \vec{x}_1 - \sin\theta\, \vec{y}_2$