Alphabet grec

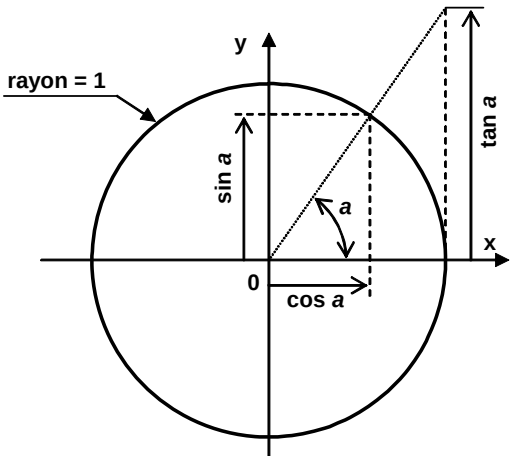
L'alphabet grec en sciences

Nom	***Minuscule***	***Majuscule***
alpha	α	A
bêta	β	B
gamma	γ	Γ
delta	δ	Δ
epsilon	ε	E
zêta ("dzéta")	ζ	Z
êta	η	H
thêta	θ	Θ
iôta	ι	I
kappa	κ	K
lambda	λ	Λ
mu	μ	M
nu	ν	N
xi ("ksi")	ξ	Ξ
omicron	o	O
pi	π	Π
rhô	ρ	P
sigma	σ	Σ
tau	τ	T
upsilon	υ	Υ
phi	φ ou ϕ	Φ
chi ("khi")	χ	X
psi	ψ	Ψ
ômega	ω	Ω

Symboles courants

Nom	***Symbole***
diamètre	$\varnothing$
nabla	∇
dérivée partielle	∂

Trigonométrie



a	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$
cos a	$\frac{\sqrt{4}}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{1}}{2}$	0
sin a	0	$\frac{\sqrt{1}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{4}}{2}$
tan a	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	indéfini

$$\cos^2 a + \sin^2 a = 1$$

$$\cos(-a) = \cos a \qquad \sin(-a) = -\sin a$$
$$\cos(\pi - a) = -\cos a \qquad \sin(\pi - a) = \sin a$$
$$\cos(\pi + a) = -\cos a \qquad \sin(\pi + a) = -\sin a$$
$$\cos(\frac{\pi}{2} - a) = \sin a \qquad \sin(\frac{\pi}{2} - a) = \cos a$$
$$\cos(\frac{\pi}{2} + a) = -\sin a \qquad \sin(\frac{\pi}{2} + a) = \cos a$$

$$\cos(a+b) = \cos a.\cos b - \sin a.\sin b \qquad \sin(a+b) = \sin a.\cos b + \cos a.\sin b$$
$$\cos(a-b) = \cos a.\cos b + \sin a.\sin b \qquad \sin(a-b) = \sin a.\cos b - \cos a.\sin b$$

$$2\cos a.\cos b = \cos(a+b) + \cos(a-b)$$
$$2\sin a.\sin b = \cos(a-b) - \cos(a+b)$$
$$2\sin a.\cos b = \sin(a+b) + \sin(a-b)$$

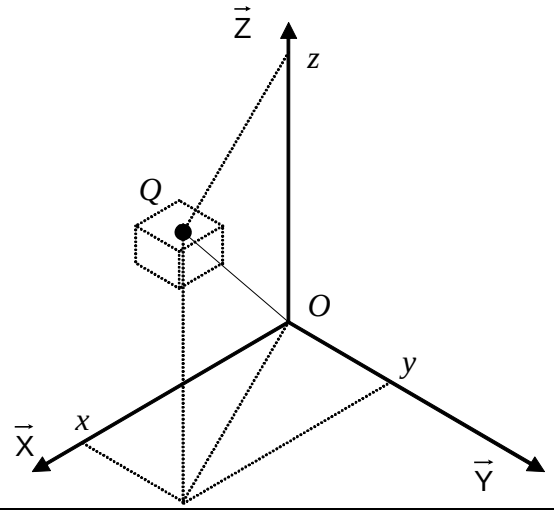
$$\cos 2a = \cos^2 a - \sin^2 a \qquad \cos^2 a = \frac{1+\cos 2a}{2}$$
$$\cos 2a = 2\cos^2 a - 1 \qquad \sin^2 a = \frac{1-\cos 2a}{2}$$
$$\cos 2a = 1 - 2\sin^2 a$$
$$\cos 2a = \frac{1-\tan^2 a}{1+\tan^2 a}$$

$$\sin 2a = 2\cos a.\sin a$$

$$\tan(a+b) = \frac{\tan a + \tan b}{1 - \tan a.\tan b} \qquad \frac{1}{\cos^2 a} = 1 + \tan^2 a = \frac{d(\tan a)}{da}$$
$$\tan(a-b) = \frac{\tan a - \tan b}{1 + \tan a.\tan b} \qquad \tan\frac{a}{2} = \frac{\sin a}{1+\cos a}$$

Coordonnées

Cartésiennes

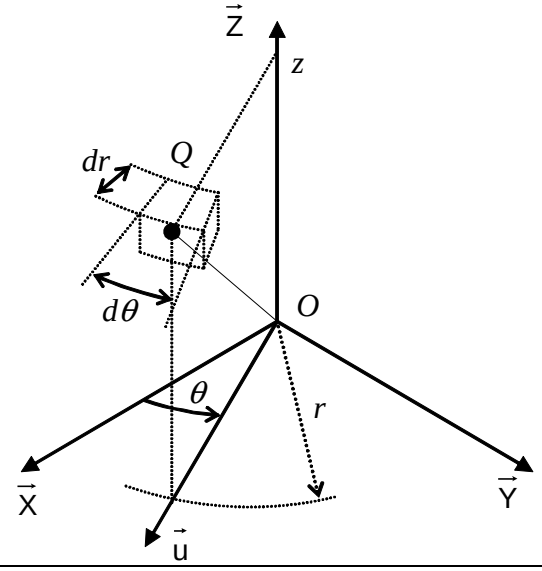


Vecteur position : $\overrightarrow{OQ} = x.\vec{X} + y.\vec{Y} + z.\vec{Z}$

Surfaces élémentaires carré : $ds_1 = dx.dy$, $ds_2 = dx.dz$, $ds_3 = dy.dz$

Volume élémentaire : $dv = dx.dy.dz$

Cylindriques



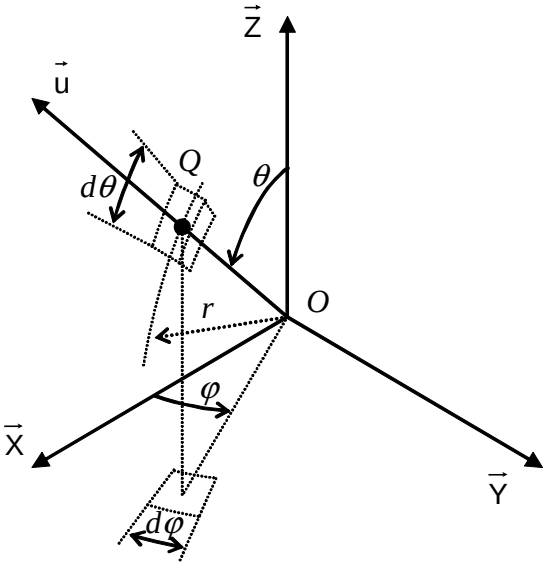
Vecteur position : $\overrightarrow{OQ} = r.\vec{u} + z.\vec{Z}$

Surface élémentaire plane circulaire : $\boxed{ds_1 = r.d\theta.dr}$

Surface élémentaire cylindrique : $\boxed{ds_2 = r.d\theta.dz}$

Volume élémentaire : $\boxed{dv = r.d\theta.dr.dz}$

Sphériques



Vecteur position : $\overrightarrow{OQ} = r.\vec{u}$

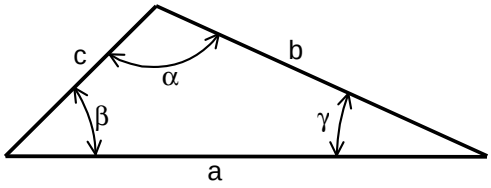
Surface élémentaire sphérique : $ds = r.\sin\theta.d\varphi \ . \ r.d\theta$

soit $\boxed{ds = r^2.\sin\theta.d\theta.d\varphi}$

Volume élémentaire : $\boxed{dv = r^2.\sin\theta.d\theta.d\varphi.dr}$

Géométries

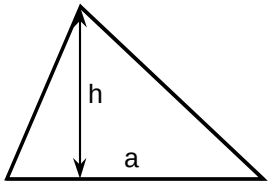
Relations dans un triangle :



$$\alpha+\beta+\gamma=180°$$
$$a^2=b^2+c^2-2bc\cos\alpha$$
$$\frac{a}{\sin\alpha}=\frac{b}{\sin\beta}=\frac{c}{\sin\gamma}$$

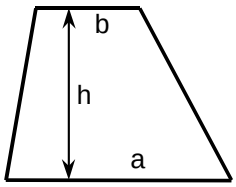
Aire des surfaces courantes :

Triangle



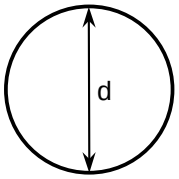
$$\text{Aire}=\frac{a.h}{2}$$

Trapèze



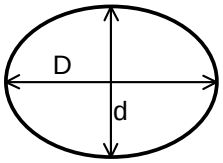
$$\text{Aire}=\frac{a+b}{2}.h$$

Cercle



$$\text{Aire}=\frac{\pi.d^2}{4}=\pi.r^2$$

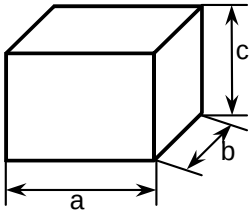
Ellipse



$$\text{Aire}=\frac{\pi.D.d}{4}=\pi.R.r$$

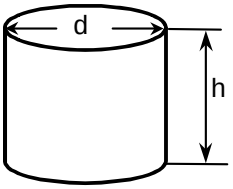
Aire et volume de solides courants :

Parallélépipède



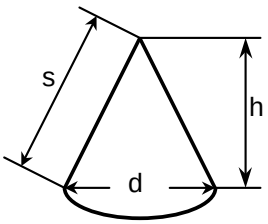
$$\text{Volume}=a.b.c$$

Cylindre



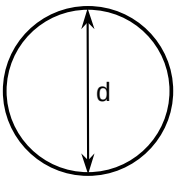
$$\text{Volume}=\frac{\pi.d^2.h}{4}=\pi.r^2.h$$
$$\text{Aire}_{\text{latérale}}=\pi.d.h=2\pi.r.h$$

Cône



$$\text{Volume}=\frac{\pi.d^2.h}{12}=\frac{\pi.r^2.h}{3}$$
$$\text{Aire}_{\text{latérale}}=\frac{\pi.d.s}{2}=\pi.r.s$$

Sphère



$$\text{Volume}=\frac{\pi.d^3}{6}=\frac{4\pi.r^3}{3}$$
$$\text{Aire}_{\text{totale}}=\pi.d^2=4\pi.r^2$$