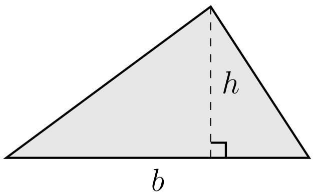
Quelques formules utiles

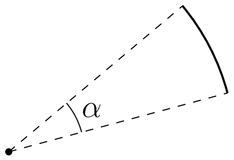
Surfaces et volumes

Triangle



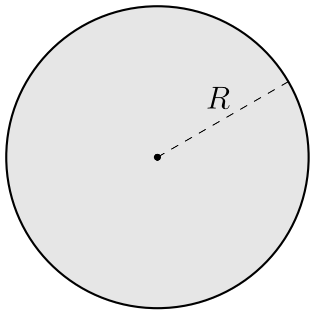
aire du triangle : $\boxed{S = \frac{1}{2} b\, h}$

Cercle - Disque



Longueur d'un arc de cercle vu du centre sous l'angle α :

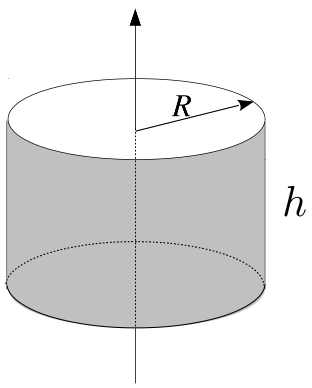
$\boxed{\widehat{AB} = R\alpha}$ avec α en radian.



Périmètre du cercle de rayon R : $\boxed{p = 2\pi R}$

Surface du disque de rayon R : $\boxed{S = \pi R^2}$

Cylindre



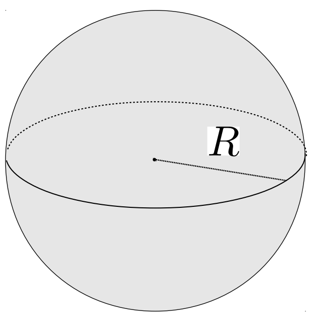
Surface latérale d'un cylindre de hauteur h et de rayon R :

$$\boxed{S = 2\pi R h}$$

Volume d'un cylindre de hauteur h et de rayon R :

$$\boxed{V = \pi R^2 h}$$

Sphère



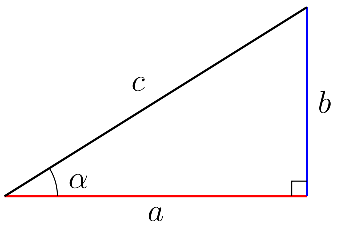
Surface d'une sphère de rayon R :

$$\boxed{S = 4\pi R^2}$$

Volume d'une boule sphérique de rayon R :

$$\boxed{V = \frac{4}{3}\pi R^3}$$

Trigonométrie

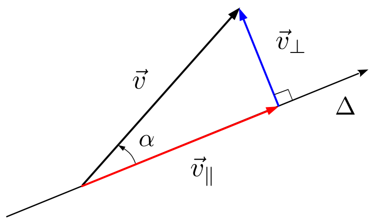


$$a^2 + b^2 = c^2$$

$$\boxed{\cos\alpha = \frac{a}{c} \quad \sin\alpha = \frac{b}{c} \quad \tan\alpha = \frac{\sin\alpha}{\cos\alpha} = \frac{b}{a}}$$

$$a = c\cos\alpha \quad b = c\sin\alpha \quad b = a\tan\alpha$$

Projection d'un vecteur

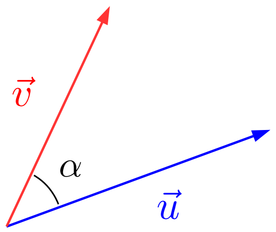


$\vec{v}_\parallel$ est la projection orthogonale du vecteur $\vec{v}$ sur l'axe Δ.

$\vec{v}_\parallel$ est parallèle à Δ
$\vec{v}_\perp$ est perpendiculaire à Δ

$$\vec{v} = \vec{v}_\parallel + \vec{v}_\perp$$

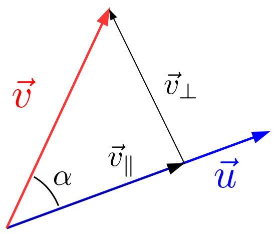
Produit scalaire de deux vecteurs



$$\boxed{\vec{u}.\vec{v} = \|\vec{u}\|\|\vec{v}\|\cos\alpha}$$

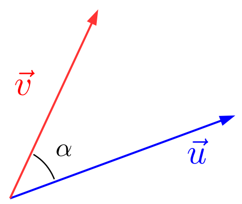
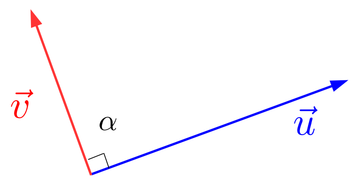
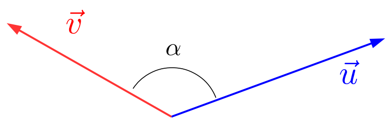
$$\vec{u}.\vec{v} = 0 \text{ pour } \vec{u} \perp \vec{v}$$

$$\vec{u}.\vec{u} = \|\vec{u}\|^2$$



$$\vec{u}.\vec{v} = \vec{u}.(\vec{v}_\parallel + \vec{v}_\perp) = \vec{u}.\vec{v}_\parallel + \underbrace{\vec{u}.\vec{v}_\perp}_{=0}$$

$$\vec{u}.\vec{v} = \vec{u}.\vec{v}_\parallel$$

		
$0 < \alpha < \frac{\pi}{2}$	$\alpha = \frac{\pi}{2}$	$\frac{\pi}{2} < \alpha < \pi$
$\vec{u}.\vec{v} > 0$	$\vec{u}.\vec{v} = 0$	$\vec{u}.\vec{v} < 0$