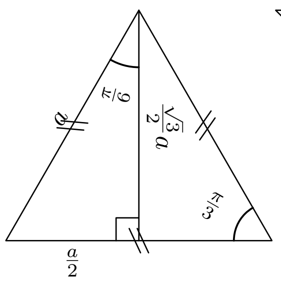
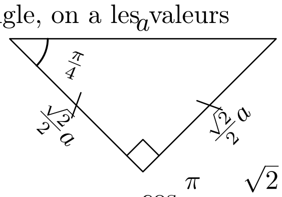
A. Rappels:

Dans le triangle rectangle, on a les valeurs





$\cos\frac{\pi}{4} = \frac{\sqrt{2}}{2}$

$\sin\frac{\pi}{4} = \frac{\sqrt{2}}{2}$

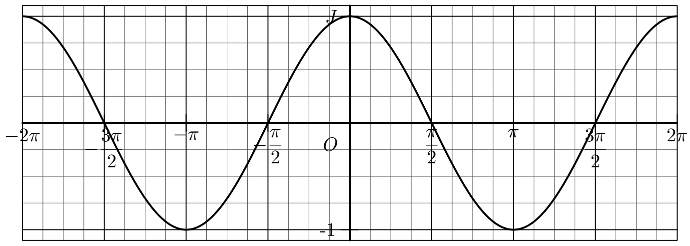
$\cos\frac{\pi}{6} = \frac{\sqrt{3}}{2}$; $\cos\frac{\pi}{3} = \frac{1}{2}$

$\sin\frac{\pi}{6} = \frac{1}{2}$; $\sin\frac{\pi}{3} = \frac{\sqrt{3}}{2}$

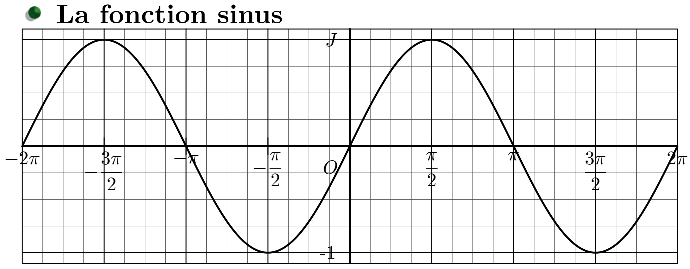
α	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$
$\cos\alpha$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
$\sin\alpha$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
$\tan\alpha$	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	$\times$

B. Courbes représentatives:

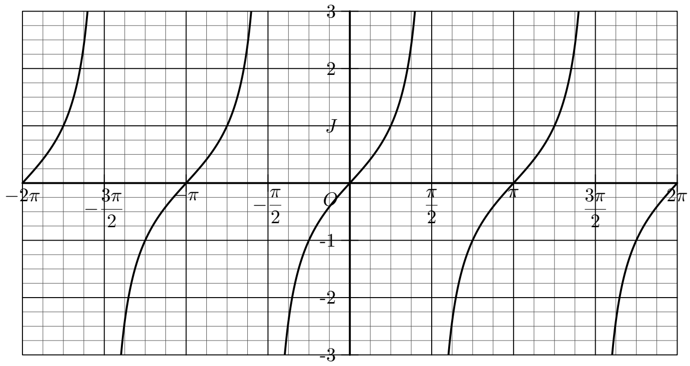
- **La fonction cosinus**



- **La fonction sinus**



- **La fonction tangente**



C. Rappels 2:

Formule des angles associés

- $\cos(-x) = \cos x$
- $\sin(-x) = -\sin x$
- $\cos(\pi+x) = -\cos x$
- $\sin(\pi+x) = -\sin x$
- $\cos(\pi-x) = -\cos x$
- $\sin(\pi-x) = \sin x$
- $\cos\left(\frac{\pi}{2}+x\right) = -\sin x$
- $\sin\left(\frac{\pi}{2}+x\right) = \cos x$
- $\cos\left(\frac{\pi}{2}-x\right) = \sin x$
- $\sin\left(\frac{\pi}{2}-x\right) = \cos x$

Identité remarquable

- $\left(\cos a\right)^2 + \left(\sin a\right)^2 = 1$

Formule d'addition et de différence

- $\cos(a+b) = \cos a\cdot\cos b - \sin a\cdot\sin b$
- $\cos(a-b) = \cos a\cdot\cos b + \sin a\cdot\sin b$
- $\sin(a+b) = \sin a\cdot\cos b + \cos a\cdot\sin b$
- $\sin(a-b) = \sin a\cdot\cos b - \cos a\cdot\sin b$

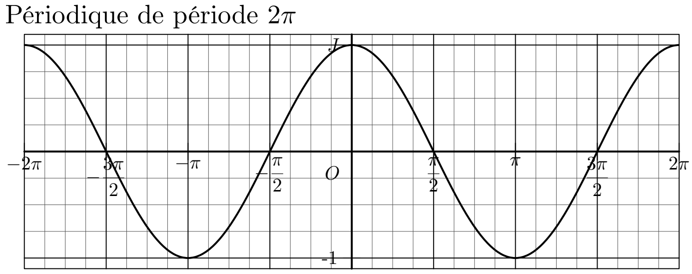
Formule de duplication

- $\cos(2a) = \left(\cos a\right)^2 - \left(\sin a\right)^2$
- $\cos(2a) = 2\cdot\left(\cos a\right)^2 - 1$
- $\cos(2a) = 1 - 2\cdot\left(\sin a\right)^2$
- $\sin(2a) = 2\cdot\sin a\cdot\cos a$

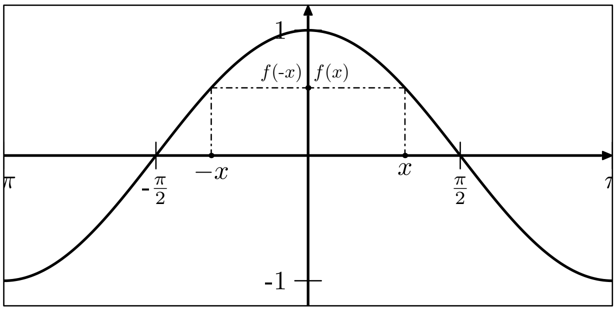
D. Etude de fonctions:

1. La fonction cosinus :

Périodique de période 2π



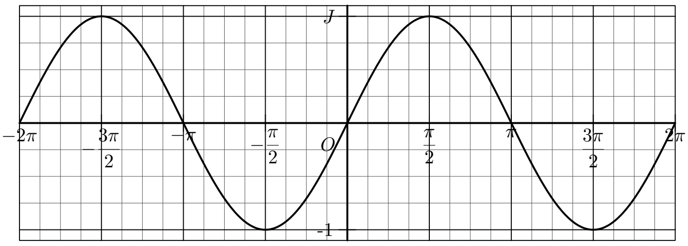
x	0	π	2π
Variation de cos	1 ↘	-1	↗ 1



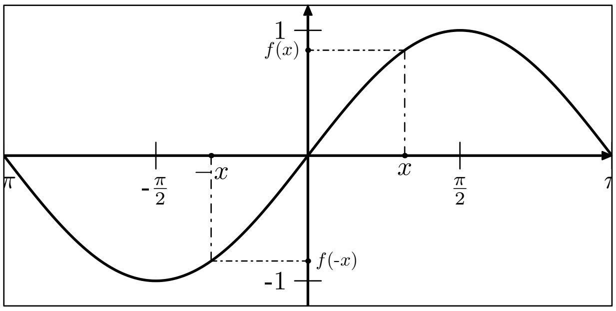
La fonction cosinus est paire : $f(\text{-}x) = f(x)$

2. La fonction sinus :

Périodique de période 2π



x	0	$\frac{\pi}{2}$	$\frac{3\pi}{2}$	2π
Variation de sin	0 ↗	1 ↘	-1 ↗	0



La fonction sinus est impaire : $f(\text{-}x) = \text{-}f(x)$