
Exercices de trigo.

Exercice 1.

Simplifier

1. $\cos \frac{\pi}{4} + \cos \frac{3\pi}{4} + \cos \frac{5\pi}{4} + \cos \frac{7\pi}{4}$
2. $\sin \frac{5\pi}{6} + \sin \frac{7\pi}{6}$
3. $\tan \frac{2\pi}{3} + \tan \frac{3\pi}{4} + \tan \frac{5\pi}{6} + \tan \frac{7\pi}{6}$.
4. $\cos^2 \frac{4\pi}{3} - \sin^2 \frac{4\pi}{3}$.

Exercice 2.

Simplifier

1. $\sin(\pi - x) + \cos\left(\frac{\pi}{2} + x\right)$
2. $\sin(x - \pi) + \cos(\pi + x) + \sin\left(\frac{\pi}{2} - x\right)$.
3. $\sin\left(\frac{\pi}{2} - x\right) + \sin\left(\frac{\pi}{2} + x\right)$.
4. $\cos(x - \pi) + \sin\left(-\frac{\pi}{2} - x\right)$

Exercice 3.

En écrivant les angles comme la somme de deux angles connus, calculer les quantités suivantes :

- | | |
|----------------------------|-----------------------------|
| 1. $\cos \frac{5\pi}{12}$ | 4. $\cos \frac{7\pi}{12}$. |
| 2. $\cos \frac{\pi}{12}$. | 5. $\cos \frac{\pi}{8}$. |
| 3. $\sin \frac{\pi}{12}$. | 6. $\sin \frac{\pi}{8}$. |

Exercice 4.

Soit $x \in \mathbb{R}$, simplifier :

1. $\cos(3x) \sin(x) - \sin(3x) \cos(x)$.
2. $\cos(x) \cos(4x) + \sin(x) \sin(4x)$.
3. $\cos(x) + \cos\left(x + \frac{2\pi}{3}\right) + \cos\left(x + \frac{4\pi}{3}\right)$.
4. $\cos(2x) + \cos\left(2x + \frac{\pi}{6}\right) + \cos\left(2x - \frac{\pi}{6}\right)$.

Exercice 5.

Soit $x \in \left]0, \frac{\pi}{2}\right[$. Simplifier

1. $\frac{\sin(2x)}{\sin(x)} - \frac{\cos(2x)}{\cos(x)}$.
2. $\frac{1 - \cos(2x)}{\sin(2x)}$
3. $\frac{\sin(3x)}{\sin(x)} - \frac{\cos(3x)}{\cos(x)}$