Particular Trigonometric Values / Valeurs trigonométriques particulières

Reference Table / Tableau de référence

Complete the missing values (. . .) in the table below with the correct sine, cosine, and tangent values.

Angle (radians)	Angle (degrees)	$\sin(x)$	$\cos(x)$	$\tan(x)$
0	0°	0	1	0
$\frac{\pi}{6}$	30°	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{3}}{3}$
$\frac{\pi}{4}$	45°	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2}$	1
$\frac{\pi}{3}$	60°	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\sqrt{3}$
$\frac{\pi}{2}$	90°	1	0	undefined

Exercises - serie 1 / Exercices - serie 1

Use the unit circle and the table above to find the sine, cosine, and tangent values of the following angles in radians.

1. $\sin(-\frac{\pi}{6})$, $\cos(-\frac{\pi}{6})$, $\tan(-\frac{\pi}{6})$
2. $\sin(\pi + \frac{\pi}{3})$, $\cos(\pi + \frac{\pi}{3})$, $\tan(\pi + \frac{\pi}{3})$
3. $\sin(2\pi - \frac{\pi}{4})$, $\cos(2\pi - \frac{\pi}{4})$, $\tan(2\pi - \frac{\pi}{4})$
4. $\sin(\pi - \frac{\pi}{3})$, $\cos(\pi - \frac{\pi}{3})$, $\tan(\pi - \frac{\pi}{3})$
5. $\sin(\frac{3\pi}{2} + \frac{\pi}{6})$, $\cos(\frac{3\pi}{2} + \frac{\pi}{6})$, $\tan(\frac{3\pi}{2} + \frac{\pi}{6})$
6. $\sin(-\pi)$, $\cos(-\pi)$, $\tan(-\pi)$
7. $\sin(2\pi + \frac{\pi}{3})$, $\cos(2\pi + \frac{\pi}{3})$, $\tan(2\pi + \frac{\pi}{3})$
8. $\sin(-2\pi + \frac{\pi}{4})$, $\cos(-2\pi + \frac{\pi}{4})$, $\tan(-2\pi + \frac{\pi}{4})$
9. $\sin(4\pi - \frac{\pi}{6})$, $\cos(4\pi - \frac{\pi}{6})$, $\tan(4\pi - \frac{\pi}{6})$
10. $\sin(-4\pi + \frac{\pi}{3})$, $\cos(-4\pi + \frac{\pi}{3})$, $\tan(-4\pi + \frac{\pi}{3})$

11. $\sin(\pi/2 - \frac{\pi}{3})$, $\cos(\pi/2 - \frac{\pi}{3})$, $\tan(\pi/2 - \frac{\pi}{3})$
12. $\sin(\pi/2 + \frac{\pi}{6})$, $\cos(\pi/2 + \frac{\pi}{6})$, $\tan(\pi/2 + \frac{\pi}{6})$
13. $\sin(\frac{3\pi}{2} - \frac{\pi}{3})$, $\cos(\frac{3\pi}{2} - \frac{\pi}{3})$, $\tan(\frac{3\pi}{2} - \frac{\pi}{3})$
14. $\sin(-\pi/2 + \frac{\pi}{4})$, $\cos(-\pi/2 + \frac{\pi}{4})$, $\tan(-\pi/2 + \frac{\pi}{4})$
15. $\sin(\pi + \frac{\pi}{2})$, $\cos(\pi + \frac{\pi}{2})$, $\tan(\pi + \frac{\pi}{2})$

Challenge / Défi :

Determine general formulas for all the transformations used in the exercises, and verify your results using the unit circle:
Déterminez les formules générales pour toutes les transformations utilisées dans les exercices, puis vérifiez vos résultats en utilisant le cercle trigonométrique.

Exercises - serie 2/ Exercices - serie 2

Determine the sine, cosine, and tangent values of the following angles using transformations to reference values.
Déterminez les valeurs du sinus, du cosinus et de la tangente des angles suivants en utilisant des transformations vers des valeurs de référence.

1. $\sin(\frac{5\pi}{6})$, $\cos(\frac{5\pi}{6})$, $\tan(\frac{5\pi}{6})$
2. $\sin(-\frac{7\pi}{3})$, $\cos(-\frac{7\pi}{3})$, $\tan(-\frac{7\pi}{3})$
3. $\sin(\frac{11\pi}{4})$, $\cos(\frac{11\pi}{4})$, $\tan(\frac{11\pi}{4})$
4. $\sin(-\frac{13\pi}{6})$, $\cos(-\frac{13\pi}{6})$, $\tan(-\frac{13\pi}{6})$
5. $\sin(\frac{17\pi}{3})$, $\cos(\frac{17\pi}{3})$, $\tan(\frac{17\pi}{3})$
6. $\sin(\frac{19\pi}{4})$, $\cos(\frac{19\pi}{4})$, $\tan(\frac{19\pi}{4})$
7. $\sin(-\frac{10\pi}{3})$, $\cos(-\frac{10\pi}{3})$, $\tan(-\frac{10\pi}{3})$
8. $\sin(\frac{23\pi}{6})$, $\cos(\frac{23\pi}{6})$, $\tan(\frac{23\pi}{6})$
9. $\sin(\frac{29\pi}{2})$, $\cos(\frac{29\pi}{2})$, $\tan(\frac{29\pi}{2})$
10. $\sin(-\frac{31\pi}{3})$, $\cos(-\frac{31\pi}{3})$, $\tan(-\frac{31\pi}{3})$