

# Trig

## Exam 2 - Friday March 18

- 3.8 Inverse Functions
- 7.1 Verifying Trigonometric Identities
- 7.2 Trigonometric Equations
- 7.3 The Addition and Subtraction Formulas
- 7.4 Multiple-Angle Formulas
- 7.6 The Inverse Trigonometric Functions

## Cofunctions

$$\begin{aligned}\sin(90^\circ - x) &= \cos x \\ \cos(90^\circ - x) &= \sin x \\ \tan(90^\circ - x) &= \cot x \\ \cot(90^\circ - x) &= \tan x \\ \sec(90^\circ - x) &= \csc x \\ \csc(90^\circ - x) &= \sec x\end{aligned}$$

## Addition/Subtraction Formulas

$$\begin{aligned}\sin(u+v) &= \sin u \cos v + \cos u \sin v \\ \sin(u-v) &= \sin u \cos v - \cos u \sin v \\ \cos(u+v) &= \cos u \cos v - \sin u \sin v \\ \cos(u-v) &= \cos u \cos v + \sin u \sin v\end{aligned}$$

## Half Angle Formulas

$$\begin{aligned}\sin\left(\frac{u}{2}\right) &= \pm \sqrt{\frac{1 - \cos u}{2}} \\ \cos\left(\frac{u}{2}\right) &= \pm \sqrt{\frac{1 + \cos u}{2}} \\ \sin^2 u &= \frac{1 - \cos 2u}{2} \\ \cos^2 u &= \frac{1 + \cos 2u}{2}\end{aligned}$$

deg	rad	$\sin \theta$	$\cos \theta$	$\tan \theta$	$\cot \theta$	$\sec \theta$	$\csc \theta$
0	0	0	1	0	-	1	-
30°	$\frac{\pi}{6}$	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{3}}{3}$	$\sqrt{3}$	$\frac{2\sqrt{3}}{3}$	2
45°	$\frac{\pi}{4}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{2}}{2}$	1	1	$\sqrt{2}$	$\sqrt{2}$
60°	$\frac{\pi}{3}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\sqrt{3}$	$\frac{\sqrt{3}}{3}$	2	$\frac{2\sqrt{3}}{3}$
90°	$\frac{\pi}{2}$	1	0	-	0	-	1

## Double Angle Formulas

$$\sin(2u) = 2 \sin u \cos u$$

$$\cos(2u) = \cos^2 u - \sin^2 u = 1 - 2 \sin^2 u = 2 \cos^2 u - 1$$