

Review Material and Practice Test for the UMSL Trigonometry Placement Test

Review Material:

(Practice Test follows review material)

Trigonometric Definitions and Identities:

Basic Definitions:

Because this is a right-angled triangle, $a^2 + b^2 = c^2$.

If angle $CAB = \alpha$ then:

$$\sin \alpha = \frac{a}{c} \quad (\text{Opposite/Hypotenuse})$$

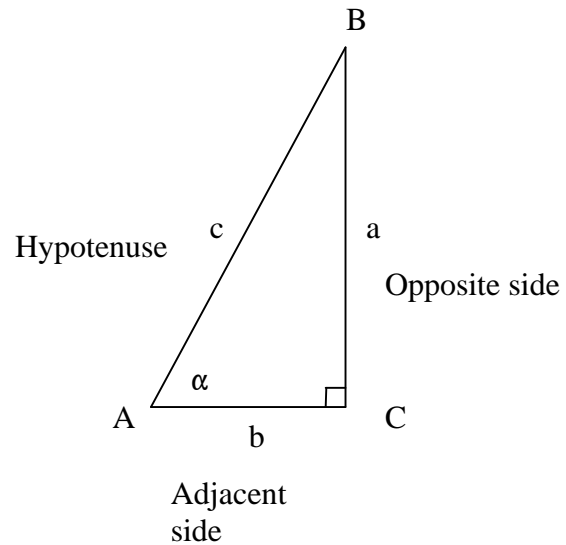
$$\cos \alpha = \frac{b}{c} \quad (\text{Adjacent/Hypotenuse})$$

$$\tan \alpha = \frac{a}{b} \quad (\text{Opposite/Adjacent})$$

$$\cot \alpha = \frac{b}{a} \quad (\text{Adjacent/Opposite}) = \frac{1}{\tan \alpha}$$

$$\sec \alpha = \frac{c}{b} \quad (\text{Hypotenuse/Adjacent}) = \frac{1}{\cos \alpha}$$

$$\csc \alpha = \frac{c}{a} \quad (\text{Hypotenuse/Opposite}) = \frac{1}{\sin \alpha}$$



To convert from degrees to radians or from radians to degrees, use the conversion: $180^\circ = \pi$ radians.

Basic Values:

Angle:	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$
Sine:	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
Cosine:	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0

Elementary Identities:

$$\begin{aligned}\sin(-x) &= -\sin x \\ \cos(-x) &= \cos(x) \\ \sin^2 x + \cos^2 x &= 1 \\ \tan^2 x + 1 &= \sec^2 x \\ 1 + \cot^2 x &= \csc^2 x\end{aligned}$$

Other Identities:

$$\begin{aligned}\sin(x+y) &= \sin x \cos y + \cos x \sin y \\ \sin(x-y) &= \sin x \cos y - \cos x \sin y \\ \cos(x+y) &= \cos x \cos y - \sin x \sin y \\ \cos(x-y) &= \cos x \cos y + \sin x \sin y \\ \tan(x+y) &= \frac{\tan x + \tan y}{1 - \tan x \tan y} \\ \sin 2x &= 2 \sin x \cos x & \cos 2x &= \cos^2 x - \sin^2 x \\ \sin^2\left(\frac{x}{2}\right) &= \frac{1 - \cos x}{2} & \cos^2\left(\frac{x}{2}\right) &= \frac{1 + \cos x}{2}\end{aligned}$$

Trig Practice Test: (Answers follow last problem)

1. $\cos \frac{-p}{2} =$

- A) -1 B) 1 C) $\frac{-1}{2}$ D) 0

2. $\sin x \cdot \sec x =$

- A) $\cos x$ B) 1 C) $\tan x$ D) $\csc x$

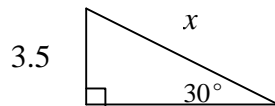
3. $\sin 30^\circ + \sin 60^\circ =$

- A) $\frac{1+\sqrt{2}}{2}$ B) $\frac{1+\sqrt{3}}{2}$ C) 1 D) $\frac{\sqrt{2}+\sqrt{3}}{2}$

4. If $x = \frac{35p}{6}$, x lies in quadrant

- A) I B) II C) III D) IV

5. In the given triangle, $x =$



- A) $\frac{7\sqrt{3}}{3}$ B) 10.5 C) 7 D) Insufficient information

6. $\sin^2(6^\circ) + \cos^2(6^\circ) =$

- A) 0.72 B) 12° C) 1 D) Can't be determined.

Answers to the above Trig. Review Test:

- 1) D 2) C 3) B 4) D 5) C 6) C