

Review
 An acute angle is greater than 0°
 and less than 90°

$\sin 15^\circ = \frac{1}{\sqrt{5}}$ $\sec 60^\circ = 2$
 $\cos 30^\circ = \frac{\sqrt{3}}{2}$ $\csc 45^\circ = \sqrt{2}$
 $\tan 45^\circ = 1$ $\cot 30^\circ = \sqrt{3}$
 Hint: Soh Cah Toa

Course Preparation for Students Taking Trigonometry in the Fall

	Fall	Winter	Spring
2012-13	Trig	Precalc	Diff Cal
	Problem Solving	Problem Solving	Problem Solving
2013-14	Integral	BC Cal	Multi II
	Linear Algebra	Multi I	Diff Eq
	Counting & Probability	Yes Math	AP Cal Review
	Problem Solving	Problem Solving	Stats
			Problem Solving
2014-15	Problem Solving	Problem Solving	Problem Solving
	DR	DR	DR

$45^\circ-45^\circ-90^\circ$
 $30^\circ-60^\circ-90^\circ$

Pythagorean Theorem:
 $a^2 + b^2 = c^2$, a, b - legs, c - hypotenuse
 $x^2 + x^2 = c^2$
 $2x^2 = c^2$
 $\sqrt{2} \cdot x = c$
 $1 < 3 < 4$
 $1 < \sqrt{3} < 2$
 $b^2 + (\frac{x}{2})^2 = x^2$
 $b^2 = x^2 - \frac{x^2}{4}$
 $b^2 = \frac{3x^2}{4}$
 $b = \frac{\sqrt{3}}{2}x$

Given that $\csc \beta = 5$, find the other trig-function values of β

$\sin \beta = \frac{1}{5}$
 $\csc \beta = \frac{5}{1}$
 $\tan \beta = \frac{1}{2\sqrt{6}}$
 $\sec \beta = \frac{5}{2\sqrt{6}} = \frac{5\sqrt{6}}{12}$
 $\cot \beta = 2\sqrt{6}$

$x^2 + 1^2 = 5^2$
 $x^2 = 24$
 $x = \sqrt{24} = 2\sqrt{6}$

Given $\cot \theta = \frac{4}{5}$, find...

$\sin \theta = \frac{5}{\sqrt{41}}$
 $\cos \theta = \frac{4}{\sqrt{41}}$
 $\tan \theta = \frac{5}{4}$
 $\sec \theta = \frac{\sqrt{41}}{4}$
 $\csc \theta = \frac{\sqrt{41}}{5}$

Reciprocal Identities:

$\sin \theta = \frac{1}{\csc \theta}$, $\csc \theta = \frac{1}{\sin \theta}$
 $\cos \theta = \frac{1}{\sec \theta}$, $\sec \theta = \frac{1}{\cos \theta}$
 $\tan \theta = \frac{1}{\cot \theta}$, $\cot \theta = \frac{1}{\tan \theta}$

$\tan \theta = \frac{\text{opp}}{\text{adj}} = \frac{\frac{\text{opp}}{\text{hyp}}}{\frac{\text{adj}}{\text{hyp}}} = \frac{\text{opp}}{\text{adj}} \cdot \frac{\text{hyp}}{\text{hyp}} = \frac{\text{opp}}{\text{adj}} = \frac{\sin \theta}{\cos \theta}$

Ratio Identities:

$\tan \theta = \frac{\sin \theta}{\cos \theta}$, $\cot \theta = \frac{\cos \theta}{\sin \theta}$

30° & 60° are complementary angles (they sum to 90°)

$\sin 30^\circ = \frac{1}{2}$ $\sin 60^\circ = \frac{\sqrt{3}}{2}$
 $\cos 30^\circ = \frac{\sqrt{3}}{2}$ $\cos 60^\circ = \frac{1}{2}$
 $\tan 30^\circ = \frac{1}{\sqrt{3}}$ $\tan 60^\circ = \sqrt{3}$
 $\sec 30^\circ = \frac{2}{\sqrt{3}}$ $\sec 60^\circ = 2$
 $\csc 30^\circ = 2$ $\csc 60^\circ = \frac{2}{\sqrt{3}}$
 $\cot 30^\circ = \sqrt{3}$ $\cot 60^\circ = \frac{1}{\sqrt{3}}$

Cofunctions

The function of an angle is equal to the cofunction of its complement.

$\sec 20^\circ = \csc 70^\circ$
 $\cot 10^\circ = \tan 80^\circ$
 $\sin 32^\circ = \frac{1}{\csc 32^\circ} = \frac{1}{\sec 58^\circ} = \cos 58^\circ$
 $\tan 13^\circ = \frac{\sin 13^\circ}{\cos 13^\circ} = \frac{\csc 77^\circ}{\sec 77^\circ} = \frac{1}{\csc 77^\circ} \cdot \frac{\sec 77^\circ}{\sec 77^\circ} = \frac{\sec 77^\circ}{\csc 77^\circ}$

Write in terms of sin/cos & 40°

$$\csc 40^\circ = \frac{1}{\sin 40^\circ}$$

$$\cot 40^\circ = \frac{\cos 40^\circ}{\sin 40^\circ}$$

$$\cos 50^\circ = \sin 40^\circ$$

$$\csc 50^\circ = \sec 40^\circ = \frac{1}{\cos 40^\circ}$$

$$\tan 50^\circ = \frac{\sin 50^\circ}{\cos 50^\circ}$$

$$\sec 50^\circ = \frac{\cos 40^\circ}{\sin 40^\circ}$$

$$= \frac{1}{\cos 50^\circ} = \frac{1}{\sin 40^\circ}$$