RADIAN MODE AND SPECIAL ANGLES

The Reciprocal Trigonometric Ratios…A Small Reminder

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

Using your Calculator with Radian Measure

Remember when you did trigonometry in grades 10 and 11, and if your calculator wasn't in *degree mode*, the answers came out wrong? Now that you know about radian measure, we can use the *radian mode* on your calculator.

When using your calculator to work with angles measured in radians, you have two options:

1) Change the calculator into radian mode.
2) Convert the radian measure to degree measure and use degree mode on your calculator.

Try using your calculator in radian mode to evaluate the following. Round your answers to the nearest hundredth, when necessary.

a) $\sin\frac{\pi}{2}$ b) $\tan(-5)$ c) $\cos\frac{3\pi}{4}$ d) $\csc 2.25$

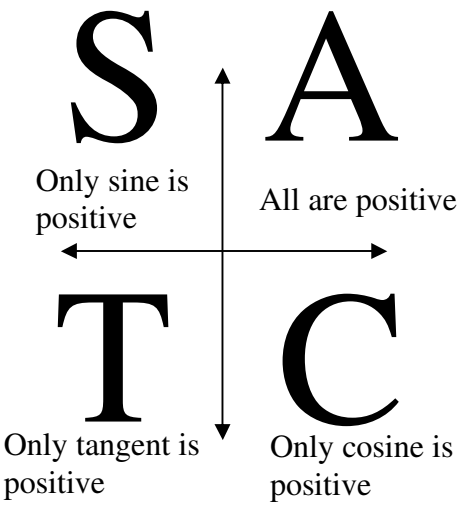
A couple things to think about…

1) How do we know that the above angle measures are in radians???....because there's no degrees sign! Now you know why it was so important to use the degrees sign in earlier grades!

2) When we calculated $\cos\frac{3\pi}{4}$ above, the result was negative. Why?

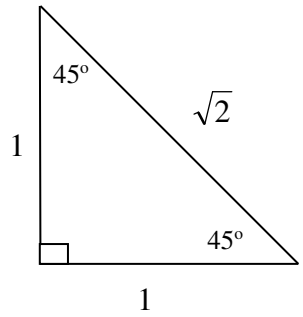
   Well, in standard position, the terminal arm for the angle $\frac{3\pi}{4}$ (or $135°$), lies in the second quadrant. Using the **CAST rule**, we know that the cosine of all angles for the second quadrant is negative.

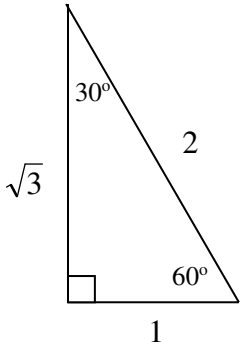
In case you've forgotten…



Special Angles and Exact Values

What's so special about these anyway?!?





θ in Degrees	θ in Radians	$\sin\theta$	$\cos\theta$	$\tan\theta$	$\csc\theta$	$\sec\theta$	$\cot\theta$
30°							
45°							
60°							

Examples

1) Find the **exact** value of each of the following.

a) $\cos\frac{5\pi}{6}$

b) $\sin(-240°)$

c) $\tan\left(\frac{11\pi}{4}\right)$

d) $\cot\left(-\frac{7\pi}{4}\right)$

2) Find the **EXACT** value of $\sin^2\frac{\pi}{4}+2\sin\frac{13\pi}{6}\cot\frac{\pi}{3}$.