

Pre-Calculus 12 Using the Special Circle

<p>Steps:</p> <ol style="list-style-type: none"> 1. Locate the quadrant the angle is located in 2. Determine the coordinates of the point 3. Choose appropriate point <ul style="list-style-type: none"> ➤ If sin chose y-coordinate ➤ If cos chose x-coordinate ➤ If tan choose $\frac{y}{x}$ 4. Rationalize the denominator where applicable 	<p>(x, y) $(\cos \theta, \sin \theta)$</p>
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Ex. 1) Determine the exact values of the following

a) $\cos \frac{\pi}{3}$ \rightarrow x-coordinate of $\frac{\pi}{3}$

$\frac{1}{2}$

b) $\sec \frac{\pi}{4}$ \rightarrow reciprocal of x-coordinate of $\frac{\pi}{4}$

$\frac{2}{\sqrt{2}}$ $(\frac{\sqrt{2}}{2})$

~~$\frac{2\sqrt{2}}{\sqrt{2}}$~~

$\sqrt{2}$ \leftarrow do not need to rationalize

c) $\csc(-\frac{2\pi}{3})$ \rightarrow reciprocal of y-coordinate of $-\frac{2\pi}{3}$

$-\frac{2}{\sqrt{3}}$

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d) $\cot \frac{5\pi}{6}$

$$\frac{-\sqrt{3}}{1}$$

$$-\sqrt{3}$$

$$\tan \theta = \frac{y}{x}$$

$$\cot \theta = \frac{x}{y}$$

coords $(-\frac{\sqrt{3}}{2}, \frac{1}{2})$

$$\frac{-\sqrt{3}}{2} \div \frac{1}{2}$$

$$\frac{-\sqrt{3}}{2} \cdot \frac{2}{1}$$

e) $\cos \frac{29\pi}{6}$

$$-\frac{\sqrt{3}}{2}$$

coterminal with $\frac{5\pi}{6}$

f) $\cos(30\pi) \cdot \sec \frac{2\pi}{3} \cdot \csc \frac{-\pi}{3}$

recip of cos
recip of sin

$$(1) \cdot (-2) \cdot \left(-\frac{2}{\sqrt{3}}\right)$$

$$\frac{4}{\sqrt{3}}$$

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Ex. 2) Find the values of θ over the interval $0 \leq \theta \leq 2\pi$

a) $\cos\theta = \frac{1}{\sqrt{2}}$

$\frac{1}{\sqrt{2}} \left(\frac{\sqrt{2}}{\sqrt{2}} \right)$

$\theta = \frac{\pi}{4}, \frac{7\pi}{4}$

$\frac{\sqrt{2}}{2}$ ← x-coordinate

b) $\tan\theta = \frac{-1}{\sqrt{3}}$

$\frac{y}{x}$ QII, IV $\tan\theta < 0$

$\theta = \frac{5\pi}{6}, \frac{11\pi}{6}$

II	Sin	A ₁₁
	Tan	cos
		IV

Assignment: Worksheet "Exercise 3: Special Angles and the Trigonometric Functions"
 #1d,f, 2d, 3a, 4a, 5b, 6b,d, 7c,d, 10, 11, 14