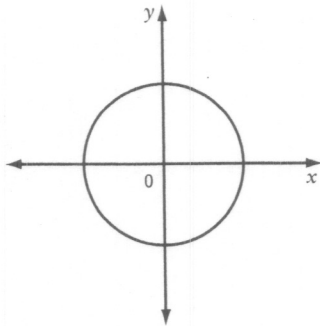


Check Your Understanding

Practise

1. Point P $(\frac{7}{25}, -\frac{24}{25})$ is on the unit circle and on the terminal arm of an angle θ in standard position. Determine the values of the six trigonometric ratios for angle θ .

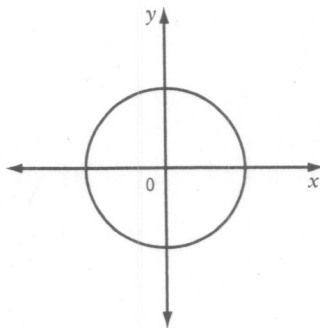


$\sin \theta = \underline{\hspace{2cm}}$ $\cos \theta = \underline{\hspace{2cm}}$ $\tan \theta = \underline{\hspace{2cm}}$

$\csc \theta = \underline{\hspace{2cm}}$ $\sec \theta = \underline{\hspace{2cm}}$ $\cot \theta = \underline{\hspace{2cm}}$

2. Without using a calculator, determine the sign (+ or -) of each of the following.

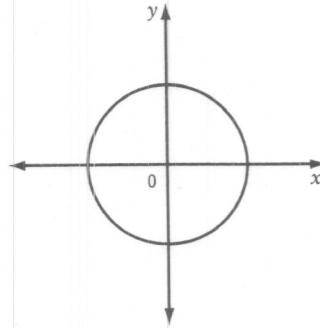
a) $\sin 580^\circ$



quadrant _____

sign is _____

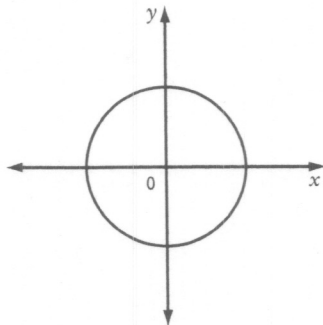
b) $\tan 1$



quadrant _____

sign is _____

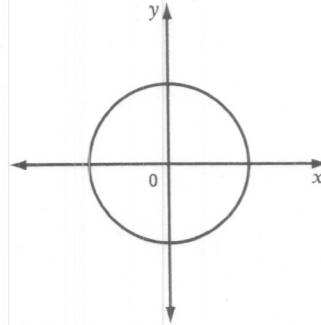
c) $\csc \theta = \frac{2\pi}{3}$



quadrant _____

sign is _____

d) $\sec \theta = \frac{5\pi}{4}$

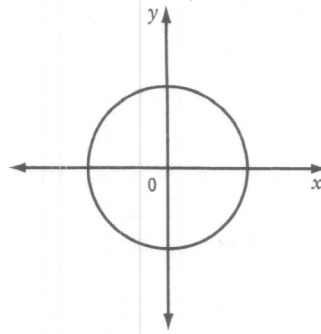


quadrant _____

sign is _____

3. In which quadrant(s) is (are) the terminal arm(s) of angle θ given the following conditions?

- a) $\cot \theta$ is positive _____
- b) $\cot \theta$ is positive and $\sin \theta$ is negative _____
- c) $\csc \theta = 1.2$ _____
- d) $\csc \theta = 1.2$ and $\cos \theta = -0.574$ _____

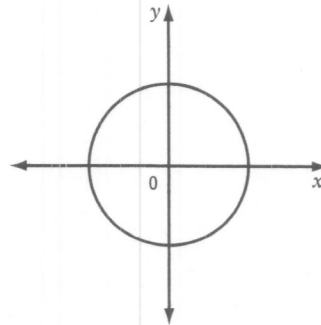


4. What is the exact value for each trigonometric ratio?

a) $\cos \frac{\pi}{3}$

$P\left(\frac{\pi}{3}\right)$ is in quadrant _____.

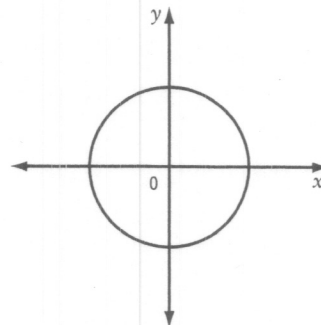
$\theta_R =$ _____



b) $\sin \frac{\pi}{4}$

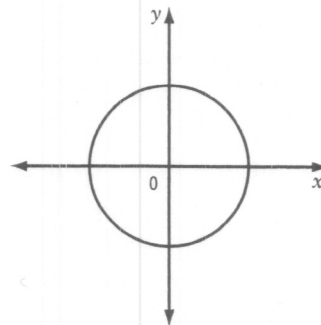
$P\left(\frac{\pi}{4}\right)$ is in quadrant _____.

$\theta_R =$ _____



c) $\tan 3\pi$

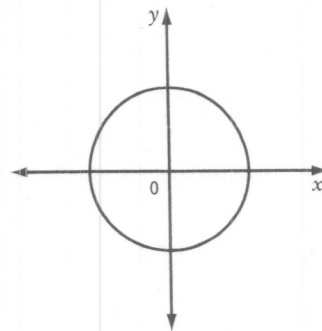
$P(3\pi)$ is a quadrantal angle.



d) $\cot\left(-\frac{2\pi}{3}\right)$

$P\left(-\frac{2\pi}{3}\right)$ is in quadrant _____.

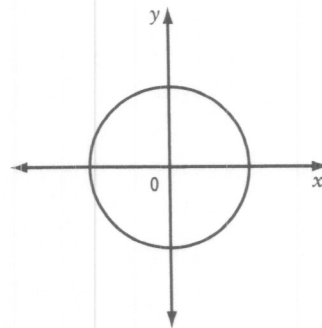
$\theta_R =$ _____



e) $\sec\frac{5\pi}{6}$

$P\left(\frac{5\pi}{6}\right)$ is in quadrant _____.

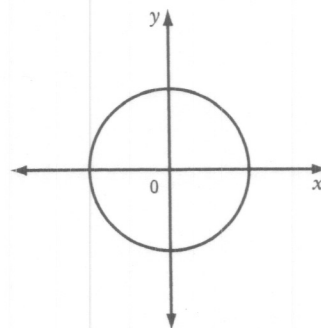
$\theta_R =$ _____



f) $\csc\left(-\frac{9\pi}{4}\right)$

$P\left(-\frac{9\pi}{4}\right)$ is in quadrant _____.

$\theta_R =$ _____



5. Determine the approximate value for each trigonometric ratio, to three decimal places.

a) $\sec 74^\circ$

b) $\cot 104^\circ$

$\sec \theta$ is the reciprocal of _____

quadrant: _____

sign (+ or -): _____

c) $\csc 2.8$

d) $\sec\left(-\frac{7\pi}{10}\right)$



These questions are similar to #1 and #2 on page 201 of *Pre-Calculus 12*.

Apply

6. Determine the measure of all angles that satisfy the following conditions. Round your answers to the nearest degree.

a) $\tan \theta = -3.078$ in the domain $0^\circ \leq \theta < 720^\circ$

$$\theta_R = \tan^{-1} (+3.078)$$

$$\approx \underline{\hspace{2cm}}$$

Tangent is negative in quadrants _____ and _____.

Therefore, $\tan \theta = -3.078$ when $\theta \approx$ _____,

_____, _____, and _____, $0^\circ \leq \theta < 720^\circ$.

b) $\sec \theta = -1.046$ in the domain $-360^\circ \leq \theta < 360^\circ$

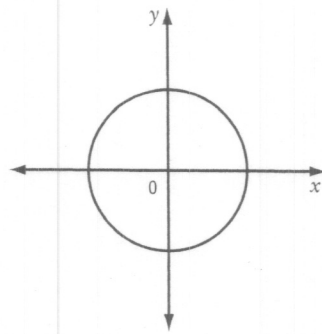
$\sec \theta$ is the reciprocal of _____.

$$\theta_R \approx \underline{\hspace{2cm}}$$

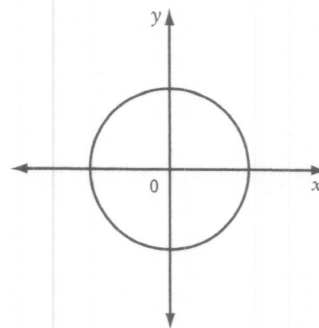
Secant is negative in quadrants _____ and _____.

Therefore, $\sec \theta = -1.046$ when $\theta \approx$ _____,

_____, _____, and _____, $-360^\circ \leq \theta < 360^\circ$.



Which other coterminal angles fall within the domain?



7. Determine the measure of all angles that satisfy the following conditions. Give exact answers.

a) $\sin \theta = -\frac{\sqrt{3}}{2}$ in the domain $0 \leq \theta < 4\pi$

$$\theta_R = \underline{\hspace{2cm}}$$

Sine is negative in quadrants _____ and _____.

Therefore, $\sin \theta = -\frac{\sqrt{3}}{2}$ when $\theta =$ _____, _____,

_____, and _____, $0 \leq \theta < 4\pi$.

b) $\csc \theta = 2$ in the domain $-2\pi \leq \theta < 2\pi$

$\csc \theta$ is the reciprocal of _____.

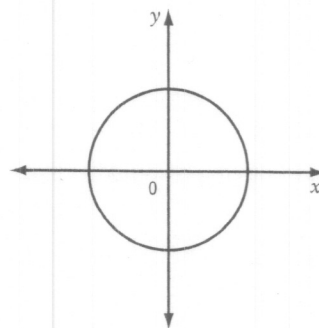
$$\theta_R = \underline{\hspace{2cm}}$$

Cosecant is positive in quadrants _____ and _____.

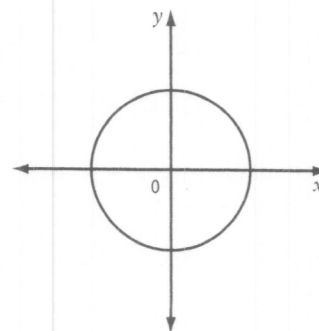
Therefore, $\csc \theta = 2$ when $\theta =$ _____, _____,

_____, and _____, $-2\pi \leq \theta < 2\pi$.

Drawing the special triangle may help.



What is the reciprocal of 2?




8. Determine the value of the five other trigonometric ratios if $\csc \theta = \frac{5}{3}$, $90^\circ \leq \theta < 180^\circ$.

The angle is in quadrant _____.

$x =$ _____ $y =$ _____ $r =$ _____

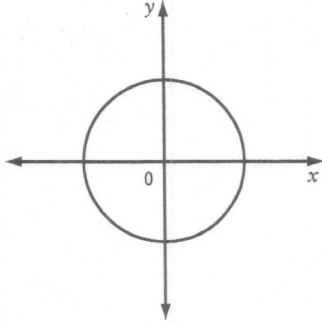
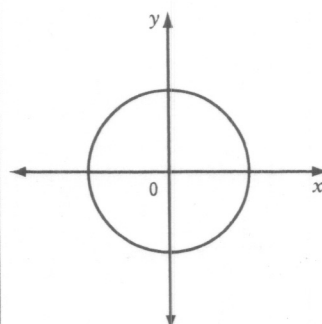
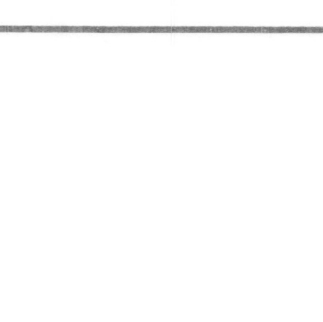

$\sin \theta =$ _____ $\cos \theta =$ _____ $\tan \theta =$ _____

$\sec \theta =$ _____ $\cot \theta =$ _____

 This question will help you with #12 on page 202 of *Pre-Calculus 12*.

Connect

9. Choose any two of the special angles $\frac{\pi}{6}$, $\frac{\pi}{4}$, and $\frac{\pi}{3}$. Complete the table below. You may also choose the quadrantal angles (on the axes), but then you will have to change the headings on the table.

$\theta_R =$	Quadrant I	Quadrant II	Quadrant III	Quadrant IV
	sin			
	csc			
	cos			
	sec			
	tan			
	sin			
	csc			
	cos			
	sec			
	tan			
	sin			
	csc			
	cos			
	sec			
	tan			
	sin			
	csc			
	cos			
	sec			
	tan			