

**NON - CALCULATOR**

Complete the missing information in the following table:

Degrees	0°	30°	45°	210°	225°	<del>210°</del> 120°
Radians (θ)	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{7\pi}{6}$	$\frac{5\pi}{4}$	$\frac{4\pi}{3}$
Coordinates	(1, 0)	$(\frac{\sqrt{3}}{2}, \frac{1}{2})$	$(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2})$	$(-\frac{\sqrt{3}}{2}, -\frac{1}{2})$	$(-\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2})$	$(-\frac{1}{2}, \frac{\sqrt{3}}{2})$

Evaluate the following:

- 1)  $\csc 45^\circ$   $\sqrt{2}$   
 $\frac{2}{\frac{\sqrt{2}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}}} = \frac{2}{1}$
- 2)  $\tan \frac{3\pi}{4}$  -1
- 3)  $\cos(-30^\circ)$   $\frac{\sqrt{3}}{2}$
- 4)  $\cot \frac{\pi}{2}$  0
- 5)  $\sec\left(-\frac{5\pi}{6}\right)$   $-\frac{2\sqrt{3}}{3}$   
 $-\frac{2}{\frac{\sqrt{3}}{3}}$
- 6)  $\sin \frac{11\pi}{4}$   $+\frac{\sqrt{2}}{2}$
- 7)  $\tan(-315^\circ)$  1
- 8)  $\cos \pi$  -1
- 9)  $\sec(-8\pi)$  1
- 10)  $\sec\left(-\frac{3\pi}{2}\right)$  undefined
- 11)  $\cos\left(\frac{9\pi}{2}\right)$  0
- 12)  $\tan\left(-\frac{\pi}{3}\right)$   $-\sqrt{3}$   
 $-\frac{\sqrt{3}}{2} \cdot \frac{2}{1}$
- 13)  $\sin\left(-\frac{11\pi}{6}\right)$   $\frac{1}{2}$
- 14)  $\cot(-210^\circ)$   $-\sqrt{3}$   
 $-\frac{\sqrt{3}}{1}$
- 15)  $\csc(-\pi)$  undefined

16. Find the reference angle, 1 positive, and 1 negative coterminal angle.

a.  $\theta = \frac{5\pi}{12}$   ~~$\frac{5\pi}{12}$~~   $105^\circ$   $75^\circ$   
 pos:  $\frac{29\pi}{12}$   
 neg:  $-\frac{19\pi}{12}$   
 ref:  $\frac{5\pi}{12}$

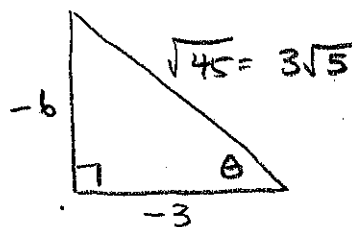
b.  $\theta = \frac{17\pi}{6}$   $510^\circ$   $150^\circ$   
 $-360^\circ$   
 pos:  $\frac{29\pi}{6}$   
 neg:  $-\frac{7\pi}{6}$   
 ref:  $\frac{\pi}{6}$   
 ( $30^\circ$ )

17) Find the six trig functions of the angle  $\theta$  (in standard position) whose terminal side passes through the point  $(-3, -6)$ .

$$\sin \theta = -\frac{6}{3\sqrt{5}} \quad \csc \theta = -\frac{3\sqrt{5}}{6}$$

$$\cos \theta = -\frac{3}{3\sqrt{5}} \quad \sec \theta = -\frac{3\sqrt{5}}{3}$$

$$\tan \theta = 2 \quad \cot \theta = \frac{1}{2}$$



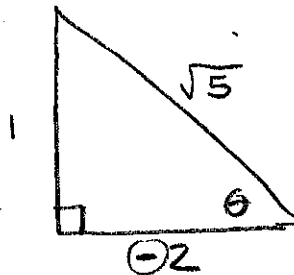
18) Find the six trig functions of the angle  $\theta$  (in standard position) given:

$$\csc \theta = \sqrt{5}; \cos \theta < 0 \quad \begin{matrix} x = - \\ y = + \end{matrix}$$

$$\sin \theta = \frac{1}{\sqrt{5}} \quad \csc \theta = \sqrt{5}$$

$$\cos \theta = -\frac{2}{\sqrt{5}} \quad \sec \theta = -\frac{\sqrt{5}}{2}$$

$$\tan \theta = -\frac{1}{2} \quad \cot \theta = -2$$



$$\begin{aligned} 1^2 + b^2 &= (\sqrt{5})^2 \\ 1 + b^2 &= 5 \\ b^2 &= 4 \\ b &= 2 \end{aligned}$$

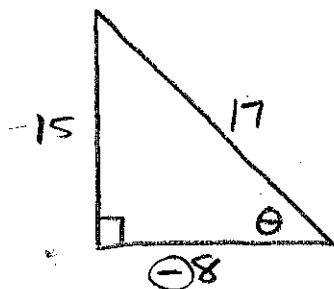
19) Find the remaining five trig functions of  $\theta$  satisfying the given conditions.

$$\frac{O}{A} \tan \theta = \frac{-15}{8}, \quad \text{Quadrant II} \quad \begin{matrix} x \text{ neg} \\ y \text{ pos} \end{matrix}$$

$$\sin \theta = \frac{15}{17} \quad \csc \theta = \frac{17}{15}$$

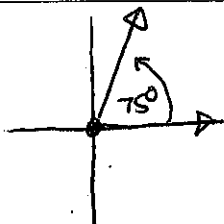
$$\cos \theta = -\frac{8}{17} \quad \sec \theta = -\frac{17}{8}$$

$$\tan \theta = -\frac{15}{8} \quad \cot \theta = -\frac{8}{15}$$

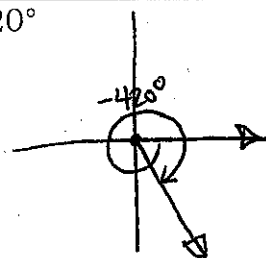


Sketch the following angles in standard position.

20.  $75^\circ$



21.  $-420^\circ$



Name the quadrant.

22.  $-\frac{15\pi}{8}$  **I**

23.  $\frac{7\pi}{20}$  **I**

Convert from radians to degrees. Round to 3 decimal places.

24.  $\frac{17\pi}{15}$   $204^\circ$

25.  $-\frac{7\pi}{5}$   $-252^\circ$

Convert from degrees to radians, in terms of  $\pi$ .

26.  $220^\circ$   $\frac{11\pi}{9}$

27.  $-648^\circ$   $-\frac{18\pi}{5}$

28. Find the measure of the arc intercepted by a central angle measuring  $\frac{7\pi}{4}$  radians in a circle of radius 6 cm. Round to 2 decimals.  $arc = radius \times radians$

$$s = 6\left(\frac{7\pi}{4}\right) = \frac{21\pi}{2} = 32.99$$

Cumulative Review Questions: Tests 1 and 2

1. Solve for x and y:  $-3\begin{bmatrix} x & 2 \\ -1 & 4 \end{bmatrix} + 2\begin{bmatrix} 8 & -3 \\ 1 & y \end{bmatrix} = \begin{bmatrix} -2 & -12 \\ 5 & 8 \end{bmatrix}$

$$\begin{aligned} -3x + 16 &= -2 \\ -3x &= -18 \\ x &= 6 \end{aligned}$$

$$\begin{aligned} -12 + 2y &= 8 \\ 2y &= 20 \\ y &= 10 \end{aligned}$$

$$\begin{aligned} x &= 6 \\ y &= 10 \end{aligned}$$

2. Evaluate:  $\begin{vmatrix} 4 & -1 \\ 7 & 2 \end{vmatrix}$   $8 + 7 = 15$   $15$

3. Identify the type of conic: circle, parabola, ellipse, hyperbola

a.  $\frac{(y+1)^2}{10} - \frac{x^2}{4} = 1$  Hyperbola    b.  $\frac{(x+2)^2}{9} + \frac{(y-1)^2}{16} = 1$  Ellipse

4. Write the equation of a circle with center  $(-4, 1)$  and radius = 5.  $(x+4)^2 + (y-1)^2 = 25$

5. Write the equation of a parabola with vertex  $(1, 3)$  and directrix  $x = -3$



$$(y-3)^2 = 16(x-1)$$