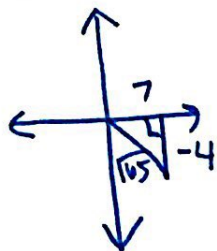


The given point lies on the terminal side of an angle  $\theta$  in standard position. Find the values of all six trigonometric functions.

1.  $(7, -4)$



$$(7)^2 + (-4)^2 = r^2$$

$$\sqrt{65} = \sqrt{r^2}$$

$$\sqrt{65} = r$$

$$x = 7$$

$$y = -4$$

$$\frac{y}{r} \sin \theta = \frac{-4}{\sqrt{65}} \quad \csc \theta = \frac{-\sqrt{65}}{4}$$

$$\frac{x}{r} \cos \theta = \frac{7}{\sqrt{65}} \quad \sec \theta = \frac{\sqrt{65}}{7}$$

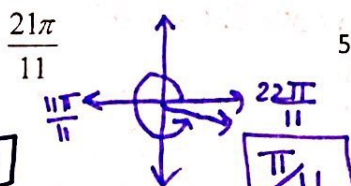
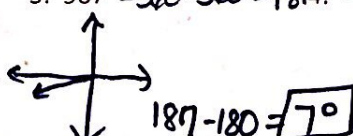
$$\frac{y}{x} \tan \theta = \frac{-4}{7} \quad \cot \theta = \frac{-7}{4}$$

Find the reference angle for each of the following angles. (Give degrees in degrees, radians in radians).

2.  $-384^\circ + 360 = -24$



3.  $907^\circ - 360 - 360 = 187$



5.  $\frac{-43\pi}{32} \cdot \frac{180}{\pi} = -241.875 + 360 = 118.125$



$$180 - 118.125 = 61.875 \cdot \frac{\pi}{180} = \frac{11\pi}{32}$$

Find one positive and one negative co-terminal angle for each of the following. (Give degrees in degrees, radians in radians).

6.  $395^\circ$   
 $395 + 360 = 755^\circ$   
 $395 - 360 - 360 = -325^\circ$

7.  $-683^\circ$   
 $-683 + 360 = -323^\circ$   
 $-683 + 360 + 360 = 37^\circ$

8.  $\frac{19\pi}{9}$   
 $\frac{19\pi}{9} + 2\pi = \frac{37\pi}{9}$

9.  $\frac{-43\pi}{26}$   
 $-\frac{43\pi}{26} + 2\pi = \frac{9\pi}{26}$

Find the exact value of each trigonometric function (No decimals accepted).

$$\frac{19\pi}{9} - 2\pi - 2\pi = \frac{-17\pi}{9}$$

$$-\frac{43\pi}{26} - 2\pi = \frac{-95\pi}{26}$$

10.  $\sec \frac{15\pi}{6}$

$$\frac{15\pi}{6} \cdot \frac{180}{\pi} = 450$$

$$450 - 360 = 90$$

$$\cos 90 = 0$$

$$\sec 90 = \frac{1}{0} = \text{undef.}$$

11.  $\tan \frac{36\pi}{18}$

$$\frac{36\pi}{18} \cdot \frac{180}{\pi} = 360$$

$$\tan 360 = \frac{0}{1} = 0$$

12.  $\cos(1020^\circ)$

$$1020 - 360 - 360 = 300$$

$$\cos 300 = \frac{1}{2}$$

13.  $\csc \frac{37\pi}{4}$

$$\frac{37\pi}{4} \cdot \frac{180}{\pi} = 1665$$

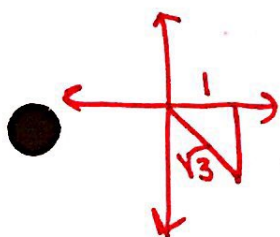
$$1665 - 360 - 360 - 360 - 360 = 225$$

$$\sin 225 = -\frac{\sqrt{2}}{2}$$

$$\csc \frac{37\pi}{4} = \frac{1}{-\frac{\sqrt{2}}{2}} = -\sqrt{2}$$

14. Find the exact value of all six trigonometric functions given the following:

$\sec \theta = \sqrt{3}$  and  $\sin \theta < 0$  Q4  
 $\frac{r}{1 \cdot x} \quad (-)$



$$(1)^2 + y^2 = (\sqrt{3})^2$$

$$1 + y^2 = 3$$

$$\sqrt{y^2} = \sqrt{2}$$

$$y = -\sqrt{2}$$

$$x = 1$$

$$r = \sqrt{3}$$

$$\frac{y}{r} \sin \theta = \frac{-\sqrt{2}}{\sqrt{3}}$$

$$\csc \theta = \frac{-\sqrt{3}}{\sqrt{2}}$$

$$\frac{x}{r} \cos \theta = \frac{1}{\sqrt{3}}$$

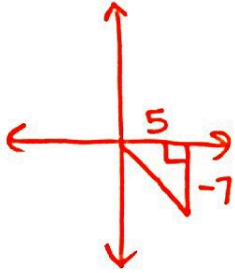
$$\frac{r}{x} \sec \theta = \sqrt{3}$$

$$\frac{y}{x} \tan \theta = -\sqrt{2}$$

$$\cot \theta = \frac{-\sqrt{2}}{1}$$

The given point lies on the terminal side of an angle  $\theta$  in standard position. Find the values of all six trigonometric functions.

1. (5, -7)



$$(5)^2 + (-7)^2 = r^2$$

$$\sqrt{74} = r$$

$$5 = x$$

$$-7 = y$$

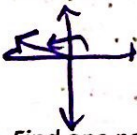
$$\frac{y}{r} \sin \theta = \frac{-7}{\sqrt{74}} \quad \csc \theta = \frac{-\sqrt{74}}{7}$$

$$\frac{x}{r} \cos \theta = \frac{5}{\sqrt{74}} \quad \sec \theta = \frac{\sqrt{74}}{5}$$

$$\frac{y}{x} \tan \theta = \frac{-7}{5} \quad \cot \theta = \frac{-5}{7}$$

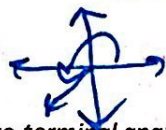
Find the reference angle for each of the following angles. (Give degrees in degrees, radians in radians).

2.  $175^\circ$

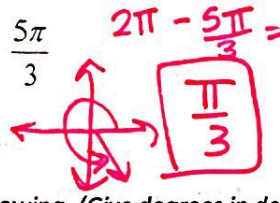


$$180 - 175 = 5^\circ$$

3.  $-490^\circ + 360 + 360 = 230^\circ$



$$230 - 180 = 50^\circ$$



$$2\pi - \frac{5\pi}{3} = \frac{\pi}{3}$$

5.  $\frac{-13\pi}{9}, \frac{180}{\pi} = -260$

$$-260 + 360 = 100$$

$$180 - 100 = 80 \cdot \frac{\pi}{180} = \frac{4\pi}{9}$$

Find one positive and one negative co-terminal angle for each of the following. (Give degrees in degrees, radians in radians).

6.  $175^\circ$

$$175 + 360 = 535^\circ$$

7.  $-490^\circ$

$$-490 + 360 = -130^\circ$$

8.  $\frac{5\pi}{3}$

$$\frac{5\pi}{3} + 2\pi = \frac{11\pi}{3}$$

9.  $\frac{-13\pi}{9}$

$$-\frac{13\pi}{9} + 2\pi = \frac{5\pi}{9}$$

$$175 - 360 = -185^\circ$$

$$-490 + 360 + 360 = 230^\circ$$

$$\frac{5\pi}{3} - 2\pi = -\frac{\pi}{3}$$

$$-\frac{13\pi}{9} - 2\pi = -\frac{31\pi}{9}$$

Find the exact value of each trigonometric function (No decimals accepted).

10.  $\sin \frac{5\pi}{3}$

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

11.  $\cos \frac{3\pi}{4}$

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

12.  $\sec(300^\circ)$

$$\cos 300 = \frac{1}{2}$$

$$\sec 300 = 2$$

13.  $\tan \frac{11\pi}{6}$

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

14. Find the exact value of all six trigonometric functions given the following:

$$\sec \theta = -\frac{5}{4} \text{ and } \tan \theta < 0$$

QII

$$(-4)^2 + y^2 = (5)^2$$

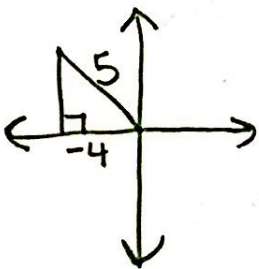
$$16 + y^2 = 25$$

$$\sqrt{y^2} = \sqrt{9}$$

$$y = 3$$

$$x = -4$$

$$r = 5$$



$$\frac{y}{r} \sin \theta = \frac{3}{5} \quad \csc \theta = \frac{5}{3}$$

$$\csc \theta = \frac{5}{3}$$

$$\frac{x}{r} \cos \theta = \frac{-4}{5} \quad \sec \theta = \frac{-5}{4}$$

$$\sec \theta = \frac{-5}{4}$$

$$\frac{y}{x} \tan \theta = \frac{3}{-4} \quad \cot \theta = \frac{-4}{3}$$

$$\cot \theta = \frac{-4}{3}$$