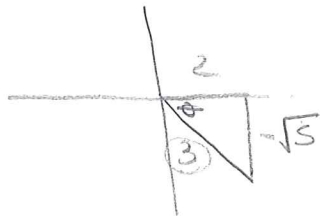


Find the six trigonometric functions with the given information. (8 points each)

1.) $(2, -\sqrt{5})$

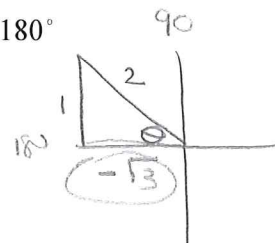
$$\begin{aligned} (2)^2 + (-\sqrt{5})^2 &= r^2 \\ 4 + 5 &= r^2 \\ 9 &= r^2 \\ 3 &= r \end{aligned}$$



$\sin \theta = \frac{-\sqrt{5}}{3}$	$\csc \theta = \frac{-3}{\sqrt{5}}$
$\cos \theta = \frac{2}{3}$	$\sec \theta = \frac{3}{2}$
$\tan \theta = \frac{-\sqrt{5}}{2}$	$\cot \theta = \frac{-2}{\sqrt{5}}$

2.) $\csc \theta = \frac{2}{1}$ and $90^\circ < \theta < 180^\circ$

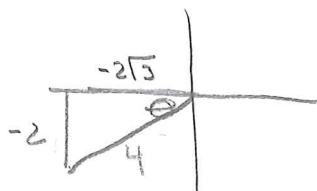
$$\begin{aligned} (1)^2 + x^2 &= (2)^2 \\ 1 + x^2 &= 4 \\ x^2 &= 3 \\ x &= \pm\sqrt{3} \end{aligned}$$



$\sin \theta = \frac{1}{2}$	$\csc \theta = 2$
$\cos \theta = \frac{-\sqrt{3}}{2}$	$\sec \theta = \frac{-2}{\sqrt{3}}$
$\tan \theta = \frac{-1}{\sqrt{3}}$	$\cot \theta = -\sqrt{3}$

3.) $(-2\sqrt{3}, -2)$

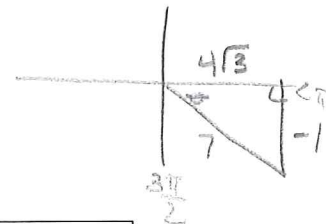
$$\begin{aligned} (-2\sqrt{3})^2 + (-2)^2 &= r^2 \\ 12 + 4 &= r^2 \\ 16 &= r^2 \\ 4 &= r \end{aligned}$$



$\frac{-2}{4}$	$\sin \theta = -\frac{1}{2}$	$\csc \theta = -2$
$\frac{-2\sqrt{3}}{4}$	$\cos \theta = \frac{-\sqrt{3}}{2}$	$\sec \theta = \frac{-2}{\sqrt{3}}$
$\frac{-2}{-2\sqrt{3}}$	$\tan \theta = \frac{1}{\sqrt{3}}$	$\cot \theta = \sqrt{3}$

4.) $\sin \theta = -\frac{1}{7}$ and $\frac{3\pi}{2} < \theta < 2\pi$

$$\begin{aligned} (-1)^2 + x^2 &= (7)^2 \\ 1 + x^2 &= 49 \\ x^2 &= 48 \\ x &= \sqrt{48} = \frac{4\sqrt{3}}{1} \end{aligned}$$



$\sin \theta = -\frac{1}{7}$	$\csc \theta = -7$
$\cos \theta = \frac{4\sqrt{3}}{7}$	$\sec \theta = \frac{7}{4\sqrt{3}}$
$\tan \theta = \frac{-1}{4\sqrt{3}}$	$\cot \theta = -4\sqrt{3}$

Find the reference angle, one positive coterminal angle, and one negative coterminal angle for the following angles. (3 points each)

5.) $\frac{3\pi}{4}$



Ref. $\angle = \frac{\pi}{4}$

Pos. $\angle = \frac{11\pi}{4}$

Neg. $\angle = -\frac{5\pi}{4}$

6.) 30°



Ref. $\angle = 30^\circ$

Pos. $\angle = 390^\circ$

Neg. $\angle = -330^\circ$

7.) -723°



Ref. $\angle = 3^\circ$

Pos. $\angle = 357^\circ$

Neg. $\angle = -1083^\circ$ or -363° or -3°

Convert each degree measure to radians and vice versa. (1 point each)

8.) $325^\circ = \frac{\pi}{180}$

$\frac{65\pi}{3}$

9.) $9.1 = \frac{180}{\pi}$ ← (decimal)

521.39°

10.) $\frac{7\pi}{6} = \frac{180}{\pi}$

210°

11.) $160^\circ = \frac{\pi}{180}$

$\frac{8\pi}{9}$

12.) $\frac{\pi}{12} = \frac{180}{\pi}$

15°

13.) $1.2 = \frac{180}{\pi}$

68.75°

Find all values for θ , if θ is in the interval $[0^\circ, 360^\circ)$. (2 points each)

14.) $\cos \theta = -\frac{1}{2}$

120° ; 240°

15.) $\sin \theta = \frac{\sqrt{3}}{2}$

60°, 120°

16.) $\cot \theta = -1$

135°, 315°

Find all values for θ , if θ is in the interval $[0, 2\pi)$. (2 points each)

17.) $\csc \theta = 1$

$\frac{\pi}{2}$

18.) $\cos \theta = -\frac{\sqrt{3}}{2}$

$\frac{5\pi}{6}, \frac{7\pi}{6}$

19.) $\tan \theta = 0$

0, π

Find the exact trigonometric value. No decimals. (2 points each)

20.) $\cos 240^\circ$

$\boxed{-\frac{1}{2}}$

21.) $\csc \frac{7\pi}{6}$

$\boxed{-2}$

22.) $\sec 135^\circ$

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

23.) $\sin \frac{\pi}{6}$

$\boxed{\frac{1}{2}}$

24.) $\tan 0$

$\boxed{0}$

25.) $\cot \frac{5\pi}{4}$

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

Identify the quadrant(s) for θ satisfying the given conditions. (1 point each)

26.) $\sin \theta > 0, \cot \theta < 0$

$\begin{array}{c|c} + & + \\ \hline - & - \end{array} \quad \boxed{Q2}$

$\begin{array}{c|c} S & A \\ \hline T & C \end{array}$

27.) $\sec \theta < 0, \tan \theta < 0$

$\begin{array}{c|c} = & - \\ \hline - & - \end{array} \quad \boxed{Q2}$

28.) $\csc \theta < 0$

$\begin{array}{c|c} - & - \\ \hline - & - \end{array} \quad \boxed{Q3 \text{ and } Q4}$

29.) $\cos \theta < 0, \sin \theta < 0$

$\begin{array}{c|c} = & - \\ \hline - & - \end{array} \quad \boxed{Q3}$

Evaluate each inverse function. (1 point each)

30.) $\tan \left[\tan^{-1} \left(\frac{\sqrt{3}}{3} \right) \right]$

$\tan \left(\frac{\pi}{6} \right)$

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

31.) $\arcsin(-1)$

$\boxed{-\frac{\pi}{2}}$

32.) $\sin \left[\cos^{-1} \left(\frac{1}{3} \right) \right]$

$\sin \left(\begin{array}{c} 3 \\ \text{---} \\ 1 \end{array} \right)$

$\begin{aligned} x^2 + y^2 &= 3^2 \\ x^2 + y^2 &= 9 \\ y^2 &= 8 \\ y &= \frac{\sqrt{8}}{2\sqrt{2}} \end{aligned}$

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

33.) $\csc \left[\arctan \frac{\sqrt{3}}{5} \right]$

$\csc \left(\begin{array}{c} 2\sqrt{3} \\ \text{---} \\ 5 \end{array} \right)$

$\begin{aligned} (\sqrt{3})^2 + 5^2 &= r^2 \\ 3 + 25 &= r^2 \\ 28 &= r^2 \\ \sqrt{28} &= r \\ \sqrt{14\sqrt{2}} &= r \\ 2\sqrt{7} &= r \end{aligned}$

$\boxed{\frac{2\sqrt{7}}{\sqrt{3}}}$

34.) $\sin^{-1} \left(-\frac{\sqrt{2}}{2} \right)$

$\boxed{-\frac{\pi}{4}}$

35.) $\cos \left[\arccos \left(-\frac{1}{2} \right) \right]$

$\cos \left(\frac{2\pi}{3} \right)$

$\boxed{-\frac{1}{2}}$

Evaluate each inverse function. (1 point each)

36.) $\sin^{-1}\left[\tan\left(\frac{\pi}{4}\right)\right]$

$\sin^{-1}(1)$

$\frac{\pi}{2}$

37.) $\arcsin(-1)$

$-\frac{\pi}{2}$

38.) $\cos^{-1}\left[\sin\left(-\frac{3\pi}{4}\right)\right]$

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

$\frac{\pi}{4}$

39.) $\arccos[\tan(\pi)]$

$\arccos(0)$

$\frac{\pi}{2}$

40.) $\sin^{-1}\left[\cos\left(\frac{\pi}{3}\right)\right]$

$\sin^{-1}\left(\frac{1}{2}\right)$

$\frac{\pi}{6}$

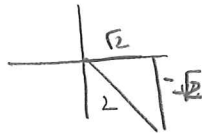
41.) $\arctan\left[\tan\left(-\frac{3\pi}{2}\right)\right]$

$\arctan(0)$

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

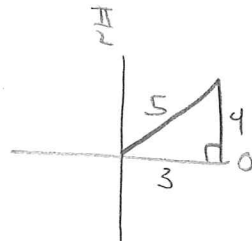
Find the six trigonometric functions with the given information. (8 points each)

42.) $(\sqrt{2}, -\sqrt{2})$



43.) $\cot \theta = \frac{3}{4}$ and $0 < \theta < \frac{\pi}{2}$

$3^2 + 4^2 = r^2$
 $9 + 16 = r^2$
 $25 = r^2$
 $5 = r$



$\sin \theta = \frac{-\sqrt{2}}{2}$	$\csc \theta = \frac{-2}{\sqrt{2}}$	$(-\sqrt{2})$
$\cos \theta = \frac{\sqrt{2}}{2}$	$\sec \theta = \frac{2}{\sqrt{2}}$	$(\sqrt{2})$
$\tan \theta = -1$	$\cot \theta = 1$	

$\sin \theta = \frac{4}{5}$	$\csc \theta = \frac{5}{4}$
$\cos \theta = \frac{3}{5}$	$\sec \theta = \frac{5}{3}$
$\tan \theta = \frac{4}{3}$	$\cot \theta = \frac{3}{4}$