

Evaluating Trigonometric Expressions

Without using a calculator, fill in the following trigonometric values. Express your answers as simplified as possible (all fractions reduced and denominators rationalized).

1. $\cos(60^\circ) = \underline{\hspace{2cm}}$	2. $\tan(45^\circ) = \underline{\hspace{2cm}}$	3. $\sec(\pi) = \underline{\hspace{2cm}}$
4. $\cos(-2\pi) = \underline{\hspace{2cm}}$	5. $\sin(210^\circ) = \underline{\hspace{2cm}}$	6. $\sin\left(\frac{4\pi}{3}\right) = \underline{\hspace{2cm}}$
7. $\csc(315^\circ) = \underline{\hspace{2cm}}$	8. $\sec(135^\circ) = \underline{\hspace{2cm}}$	9. $\cot(-270^\circ) = \underline{\hspace{2cm}}$
10. $\tan\left(\frac{\pi}{4}\right) = \underline{\hspace{2cm}}$	11. $\cos(30^\circ) = \underline{\hspace{2cm}}$	12. $\sec(120^\circ) = \underline{\hspace{2cm}}$
13. $\sin\left(-\frac{\pi}{6}\right) = \underline{\hspace{2cm}}$	14. $\tan\left(\frac{\pi}{2}\right) = \underline{\hspace{2cm}}$	15. $\cot\left(-\frac{\pi}{2}\right) = \underline{\hspace{2cm}}$
16. $\cos\left(\frac{2\pi}{3}\right) = \underline{\hspace{2cm}}$	17. $\sec(0) = \underline{\hspace{2cm}}$	18. $\cot\left(-\frac{\pi}{3}\right) = \underline{\hspace{2cm}}$
19. $\tan(270^\circ) = \underline{\hspace{2cm}}$	20. $\sin(315^\circ) = \underline{\hspace{2cm}}$	21. $\sin(855^\circ) = \underline{\hspace{2cm}}$

Use the given point on the terminal side of an angle, θ , to evaluate the six trigonometric functions of θ .

22. $(7, -24)$

23. $(-2, 3)$

Find the reference angle, θ' .

24. 100°

25. 310°

26. 240°

27. -250°

28. $\frac{7\pi}{6}$

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

30. $\frac{7\pi}{5}$

31. $\frac{13\pi}{10}$

32. If $\cos\theta > 0$ and $\tan\theta < 0$ in which quadrant must θ lie?

ANSWERS

1. $\frac{1}{2}$	2. 1	3. -1			
4. 1	5. $-\frac{1}{2}$	6. $-\frac{\sqrt{3}}{2}$			
7. $-\sqrt{2}$	8. $-\sqrt{2}$	9. 0			
10. 1	11. $\frac{\sqrt{3}}{2}$	12. -2			
13. $-\frac{1}{2}$	14. <i>undefined</i>	15. 0			
16. $-\frac{1}{2}$	17. 1	18. $-\frac{\sqrt{3}}{3}$			
19. <i>undefined</i>	20. $-\frac{\sqrt{2}}{2}$	21. $\frac{\sqrt{2}}{2}$			
22. $\sin\theta = -\frac{24}{25}$	$\cos\theta = \frac{7}{25}$	$\tan\theta = -\frac{24}{25}$	$\csc\theta = -\frac{25}{24}$	$\sec\theta = \frac{25}{7}$	$\cot\theta = -\frac{25}{24}$
23. $\sin\theta = \frac{3\sqrt{13}}{13}$	$\cos\theta = -\frac{2\sqrt{13}}{13}$	$\tan\theta = -\frac{3}{2}$	$\csc\theta = \frac{\sqrt{13}}{3}$	$\sec\theta = -\frac{\sqrt{13}}{2}$	$\cot\theta = -\frac{2}{3}$
24. 80°	25. 50°	26. 60°	27. 70°		
28. $\frac{\pi}{6}$	29. $\frac{\pi}{3}$	30. $\frac{2\pi}{5}$	31. $\frac{3\pi}{10}$		
32. 4 th quadrant					