

1. If $\sin \theta > 0$ and $\cos \theta < 0$ then θ lies in quadrant(s) ____.
2. If $\cos \theta < 0$ and $\tan \theta > 0$ then θ lies in quadrants(s) ____.
3. If $\tan \alpha > 0$ and $\csc \alpha < 0$ then α lies in quadrant(s) ____.
4. Express $\sin 45^\circ \cos 15^\circ - \cos 45^\circ \sin 15^\circ$ as a trigonometric function of a single angle and simplify.
5. Express $\cos 35^\circ \cos 25^\circ + \sin 35^\circ \sin 25^\circ$ as a trigonometric function of a single angle.
6. Express $\cos 35^\circ \cos 25^\circ + \sin 35^\circ \sin 25^\circ$ as a trigonometric function of a single angle.
7. Use trigonometric identities to simplify $\sin\left(\frac{3\pi}{2} - x\right)$
8. Use trigonometric identities to simplify $\cos\left(\frac{\pi}{2} + x\right)$
9. Simplify: $\cos\left(\frac{3\pi}{2} + \theta\right)$
10. Given that $\sin \alpha = -\frac{8}{17}$ and $\cos \beta = -\frac{4}{5}$, α and β are in quadrant III, then $\sin(\alpha - \beta) =$ ____.
11. If $\sin A = \frac{2}{3}$, $\cos B = \frac{3}{4}$, $\angle A$ is in quadrant II, and $\angle B$ is in quadrant IV, evaluate $\cos(A + B)$. (Answer in radical form and put everything over a common denominator.)
12. If α and β are second-quadrant angles and $\sin \alpha = \frac{1}{3}$ and $\sin \beta = \frac{2}{3}$, find the exact value of $\cos(\alpha - \beta)$.
13. If $\tan \alpha = \frac{5}{12}$ and $\cos \alpha < 0$, find $\cos 2\alpha$.
14. If $\csc B = -\frac{13}{5}$ with $\angle B$ is in quadrant III. What is the value of $\sin(2B)$?

15. If $\csc A = -\frac{5}{3}$ with $\angle A$ is in quadrant III. What is the value of $\cos(2A)$?

Simplify.

16. $\sin^2 \theta + \cos^2 \theta + \tan^2 \theta$

17. $\sec^2 \theta - \tan^2 \theta + \cot^2 \theta$

18. $\cos \theta \sec \theta - \frac{\cos \theta}{\sec \theta}$

Verify each identity.

19. $\frac{\csc \theta}{\tan \theta + \cot \theta} = \cos \theta$

20. $\frac{1 + \tan \theta}{\sin \theta} = \csc \theta + \sec \theta$

21. $\frac{\cot \theta - 1}{1 - \tan \theta} = \cot \theta$

22. $(\sin \theta + \cos \theta)^2 - 1 = 2 \sin \theta \cos \theta$

23. $(\cot \theta + 1)^2 - 2 \cot \theta = \csc^2 \theta$

24. Express $8 \sin x \cos x$ in terms of a single trigonometric function.

Simplify.

25. $\cos \theta \sec \theta - \frac{\cos \theta}{\sec \theta}$

Verify each identity.

26. $\frac{\cos \theta + \sin \theta}{\cos \theta} + \frac{\cos \theta - \sin \theta}{\sin \theta} = \csc \theta \sec \theta$

27. Simplify: $\frac{2 \cos x}{\sin 2x}$

28. Simplify: $\frac{\sin \theta}{1 + \cos \theta}$

29. Simplify: $\frac{\sin \beta + \tan \beta}{1 + \cos \beta}$

Verify each identity.

$$30. \csc \theta + \cot \theta = \frac{\sin \theta}{1 - \cos \theta}$$

Solve.

$$31. 2\cos^2 \theta + 7\cos \theta = 4$$

$$32. 2\sin^2 \theta = 9\sin \theta + 5$$

$$33. 2\sin^2 \theta = \sin \theta + 1$$

$$34. 2\sin \theta \cdot \cos \theta = \sin \theta$$

$$35. 2\cos^2 \theta + \sin \theta = 2$$

36. Find all values of x that satisfy $\sin 2x = 1$ for $0 \leq x < 2\pi$.

Solve.

$$37. 3\sin^2 \theta = \cos^2 \theta$$

$$38. \cos^2 \theta - 3\sin \theta = 3$$

$$39. \sin^2 \theta - 3\cos \theta = 3$$

Answer List

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|----------------------------------------------------------------------|---------------------------------------------|------------------------------------------------------|
| 1. II | 2. III | 3. III |
| 4. $\frac{1}{2}$ | 5. $\cos 10^\circ$ | 6. $\cos 10^\circ$ |
| 7. $-\cos x$ | 8. $-\sin x$ | 9. $\sin \theta$ |
| 10. $-\frac{13}{85}$ | 11. $-\frac{3\sqrt{5} - 2\sqrt{7}}{12}$ | 12. $\frac{2\sqrt{10} + 2}{9}$ |
| 13. $\frac{119}{169}$ | 14. $\frac{120}{169}$ | 15. $\frac{7}{25}$ |
| 16. $\sec^2 \theta$ | 17. $\csc^2 \theta$ | 18. $\sin^2 \theta$ |
| 19. | 20. | 21. |
| 22. | 23. | 24. $4 \sin 2x$ |
| 25. $\sin^2 \theta$ | 26. | 27. $\csc x$ |
| 28. $\csc \theta - \cot \theta$ | 29. $\tan \beta$ | 30. |
| 31. $\frac{\pi}{3}, \frac{5\pi}{3}$ | 32. $\frac{7\pi}{6}, \frac{11\pi}{6}$ | 33. $\frac{\pi}{2}, \frac{7\pi}{6}, \frac{11\pi}{6}$ |
| 34. $0, \frac{\pi}{3}, \frac{5\pi}{3}, \pi$ | 35. $0, \frac{\pi}{6}, \frac{5\pi}{6}, \pi$ | 36. $\frac{\pi}{4}, \frac{5\pi}{4}$ |
| 37. $\frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$ | 38. $\frac{3\pi}{2}$ | 39. π |

Catalog List

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