

BEDROCK TRIGONOMETRIC EQUATIONS.

Each of these is a fundamental, bedrock trig equation which you should be able to solve easily. Solving other trig equations depends on your being able to solve these. A good analogy is if solving trig equations is like reading, solving these equations is like knowing the sounds of the letters of the alphabet. These should become second nature to you. You should **NOT** require a CALCULATOR to solve any of these equations.

Directions: Solve each equation on the interval $[0, 2\pi)$. Use ONLY those methods discussed in class.

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|------------------|-------------------|--------------------|
| 1. $\sin(x) = 0$ | 7. $\sin(x) = 1$ | 13. $\sin(x) = -1$ |
| 2. $\cos(x) = 0$ | 8. $\cos(x) = 1$ | 14. $\cos(x) = -1$ |
| 3. $\tan(x) = 0$ | 9. $\tan(x) = 1$ | 15. $\tan(x) = -1$ |
| 4. $\cot(x) = 0$ | 10. $\cot(x) = 1$ | 16. $\cot(x) = -1$ |
| 5. $\sec(x) = 0$ | 11. $\sec(x) = 1$ | 17. $\sec(x) = -1$ |
| 6. $\csc(x) = 0$ | 12. $\csc(x) = 1$ | 18. $\csc(x) = -1$ |

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|-----------------------------|------------------------------|------------------------------------|-------------------------------------|
| 19. $\sin(x) = \frac{1}{2}$ | 21. $\sin(x) = -\frac{1}{2}$ | 23. $\sin(x) = \frac{\sqrt{3}}{2}$ | 25. $\sin(x) = -\frac{\sqrt{3}}{2}$ |
| 20. $\cos(x) = \frac{1}{2}$ | 22. $\cos(x) = -\frac{1}{2}$ | 24. $\cos(x) = \frac{\sqrt{3}}{2}$ | 26. $\cos(x) = -\frac{\sqrt{3}}{2}$ |
| 27. $\tan(x) = \sqrt{3}$ | 29. $\tan(x) = -\sqrt{3}$ | 31. $\tan(x) = \frac{1}{\sqrt{3}}$ | 33. $\tan(x) = -\frac{1}{\sqrt{3}}$ |
| 28. $\cot(x) = \sqrt{3}$ | 30. $\cot(x) = -\sqrt{3}$ | 32. $\cot(x) = \frac{1}{\sqrt{3}}$ | 34. $\cot(x) = -\frac{1}{\sqrt{3}}$ |

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Answers:

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|---------------------------------|---------------------------------|---------------------------------|---------------------------|
| 1. $\{0, \pi\}$ | 7. $\{\frac{\pi}{2}\}$ | 13. $\{3\pi/2\}$ | |
| 2. $\{\frac{\pi}{2}, 3\pi/2\}$ | 8. $\{0\}$ | 14. $\{\pi\}$ | |
| 3. $\{0, \pi\}$ | 9. $\{\frac{\pi}{4}, 5\pi/4\}$ | 15. $\{3\pi/4, 7\pi/4\}$ | |
| 4. $\{\frac{\pi}{2}, 3\pi/2\}$ | 10. $\{\frac{\pi}{4}, 5\pi/4\}$ | 16. $\{3\pi/4, 7\pi/4\}$ | |
| 5. \emptyset | 11. $\{0\}$ | 17. $\{\pi\}$ | |
| 6. \emptyset | 12. $\{\frac{\pi}{2}\}$ | 18. $\{3\pi/2\}$ | |
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| 19. $\{\frac{\pi}{6}, 5\pi/6\}$ | 21. $\{7\pi/6, 11\pi/6\}$ | 23. $\{\frac{\pi}{3}, 2\pi/3\}$ | 25. $\{4\pi/3, 5\pi/3\}$ |
| 20. $\{\frac{\pi}{3}, 5\pi/3\}$ | 22. $\{2\pi/3, 4\pi/3\}$ | 24. $\{\frac{\pi}{6}, 7\pi/6\}$ | 26. $\{2\pi/3, 4\pi/3\}$ |
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| 27. $\{\frac{\pi}{3}, 4\pi/3\}$ | 29. $\{2\pi/3, 5\pi/3\}$ | 31. $\{\frac{\pi}{6}, 7\pi/6\}$ | 33. $\{5\pi/6, 11\pi/6\}$ |
| 28. $\{\frac{\pi}{6}, 7\pi/6\}$ | 30. $\{5\pi/6, 11\pi/6\}$ | 32. $\{\frac{\pi}{3}, 4\pi/3\}$ | 34. $\{2\pi/3, 5\pi/3\}$ |