

### Trigonometric Equations Maze

Directions: Solve each equation on the given interval. Use your solutions to navigate through the maze. **Staple all work to this paper!**

**Start!**

End! 😊

$-2 - 3\sin x = 1 - 6\sin x$   
[0, 2π]

$12 \csc x = 3 \csc x + 6\sqrt{3}$   
[0, π/2]

$5 - 2\cot x = 4 - 3\cot x$   
[π, 2π]

$2 - 5\sec x = \sec x - 10$   
[0, π]

$3\sqrt{3} + 2\tan x = 2\sqrt{3} - \tan x$   
[π, 2π]

$\sqrt{5} \cos x = \sqrt{10} - \sqrt{5} \cos x$   
[3π/2, 2π]

$4 - \tan^2 x = 7 - 2\tan^2 x$   
[π, 3π/2]

$3\cos x + \frac{9}{2} = 5 + 4\cos x$   
[0, π]

$3\sqrt{2} \sec x + 4\sqrt{6} = 2\sqrt{6}$   
[0, π]

$\cos^2 x - 3 = -2 - \cos^2 x$   
[3π/2, 2π]

$-5\sec x = 2\sqrt{2} - 3\sec x$   
[π, 2π]

$3\cot x - 1 = 11 - \cot x$   
[0, π/2]

$-6\cot x = 3\sqrt{3} + 3\cot x$   
[3π/2, 2π]

$2\sqrt{2}(\sec x - 1) = \sqrt{2} \sec x - \sqrt{2}$   
[0, 2π]

$7\sin x = \sin x - 3\sqrt{3}$   
[π, 3π/2]

$\sqrt{3} - 8\tan x = -11\tan x + 2\sqrt{3}$   
[π/2, 3π/2]

$2(2 + \sqrt{3} \cos x) = 4 - 2\sqrt{3}$   
[0, 2π]

Version 1: Simple Isolation

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### Trigonometric Equations Maze

Directions: Solve each equation on the given interval. Use your solutions to navigate through the maze. **Staple all work to this paper!**

$\cot x = \sqrt{2} \cot x - \cot x$   
[π, 2π]

$4\sin^2 x - \cos x - \cos x = 0$   
[0, π/2]

$3\sec^2 x - \csc x = 4 \csc x$   
[π, 3π/2]

End! 😊

$4\cos^2 x + 3 = 4\cos^2 x + 3\cos x$   
[3π/2, 2π]

$\sqrt{2} \tan x - \cos x - \tan x = 0$   
[π, 2π]

$\cos^2 x + 3\cos x + 1 = -\cos^2 x$   
[π, 3π/2]

$3\tan^2 x - \sin x + \sin x = 2\sin x$   
[π/2, π]

$\csc^2 x + 4 = 5\csc^2 x$   
[3π/2, 2π]

$\cot x + \sqrt{3} \cot x = 0$   
[π, 2π]

$\tan x - \sec^2 x + \tan x = 3\tan x$   
[0, π/2]

$\tan^2 x - 21\tan x = \tan x$   
[π, 3π/2]

$2\sin^2 x - 1 = \sin x$   
[π/2, 2π]

$\cot^2 x - \sec^2 x - 2\cot x - 2$   
[0, π/2]

$\cot^2 x + 4\cot x + 1 = \cot x - 1$   
[0, π]

$2\sin x - \cos x = \sqrt{3} \sin x$   
[π, 2π]

Version 2: Factoring Required

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### Trigonometric Equations Maze

Directions: Solve each equation on the given interval. Use your solutions to navigate through the maze. **Staple all work to this paper!**

$\cot x + \sqrt{2} \cos x = 0$   
[3π/2, 2π]

$\cos x - 5 = -4 - \sin x$   
[π/2, 3π/2]

$0 = 2\tan x - \sec^2 x$   
[π/2, 2π]

$3\tan x + \sqrt{3} \sec x = \tan x$   
[π, 3π/2]

$\tan^2 x + 3 = 3\sec x$   
[0, π]

$\csc x - \sqrt{2} \cot x = 0$   
[π/2, 2π]

$\sqrt{3} \sin x + 3\cos x = 0$   
[π/2, π]

$\sec x = \tan^2 x - 1$   
[π, 2π]

$2\cot x + \csc^2 x = 0$   
[0, π]

$-\csc^2 x = -2\cot x$   
[π, 3π/2]

$3\sin^2 x - \sin x - 2 = -\cos^2 x$   
[3π/2, 2π]

$\sin^2 x = \cos x + \cos^2 x$   
[0, π]

End! 😊

$\csc x + 2 = 3 - \cot x$   
[0, 3π/2]

$\cos x - \cot x = 2 - \sin x$   
[π/2, 2π]

$3\csc^2 x - 4\cot x = 0$   
[π, 2π]

$\csc x = 2\csc x + \sqrt{2} \cot x$   
[0, π]

$3\sin x = \sqrt{3} \cos x + 2\sin x$   
[π/2, 3π/2]

Version 3: Fundamental Identities

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### Trigonometric Equations Maze

Directions: Solve each equation on the given interval. Use your solutions to navigate through the maze. **Staple all work to this paper!**

**Start!**

$\sin 2x = -\sqrt{3} \cos x$   
[π, 3π/2]

$\tan \frac{x}{2} + \cot x = \sqrt{2}$   
[π/2, 2π]

$\cos x - \sin \frac{x}{2} = 0$   
[π/2, π]

$\tan 2x = \tan x = 0$   
[π/2, π]

$1 - \sin x = \cos 2x$   
[0, π/2]

$\sin(x - \frac{\pi}{2}) + \sin 2x = 0$   
[0, π/2]

$\sin(x - \frac{\pi}{3}) = \cos(x - \frac{\pi}{6}) - \frac{\sqrt{6}}{2}$   
[0, 3π/2]

$4\cos \frac{x}{2} - 2\sin^2 x = \cos x + 1$   
[π, 2π]

$\tan(x - \frac{\pi}{4}) - \sec^2 x = 0$   
[π, 2π]

$\cos x - \cos \frac{x}{2} = 0$   
[π, 3π/2]

End! 😊

$4\sin^2 x + \cos 2x = 3\sin x$   
[π/2, 3π/2]

$\sqrt{2} \cos x + \sin 2x = 0$   
[3π/2, 2π]

$\cos 2x + \cos x = 0$   
[π, 2π]

$\tan(x - \frac{\pi}{3}) = \tan 2x$   
[0, 2π]

$6\sin^2 x + \cos 2x - 3 = 0$   
[π, 2π]

$2\sin^2 \frac{x}{2} - 4\cos^2 x = -\cos x$   
[π/2, π]

Version 4: Sum and Difference of Angles, Double-Angle, and Half-Angle Identities

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### Trigonometric Equations Maze

$9\tan^2 x - 1 = 0$   
[π, 3π/2]

$\cos 2x - 4 + 6\sin^2 x = 0$   
[π, 2π]

$2\sec^2 x + 2\tan x = \sec^2 x$   
[π, 3π/2]

$4 - 21\tan x = 5 - 3\tan x$   
[π/2, 2π]

$-\sqrt{3} \cos \frac{x}{2} + \sin x = 0$   
[π/2, π]

$0 = 2\cot x - \cot x - \csc x$   
[0, π/2]

$\sin 2x + 3\cos x = \cos x$   
[π, 3π/2]

$\sin^2 \frac{x}{2} - \sin^2 x = -\cos x$   
[0, π/2]

$-\cos x = \sqrt{3} \sin x - 2\cos x$   
[π/2, 2π]

$\tan(x + \pi) + \tan(x - \pi) = 2$   
[π/2, π]

$2\tan x - \sqrt{3} \sec x = 0$   
[π/2, π]

$-\sin 2x = \sqrt{3} \cos x - 2\sin 2x$   
[π/2, π]

End! 😊

Version 5: Mixed Equations

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### Trigonometric Equations Maze

Directions: Solve each equation on the given interval. Use your solutions to navigate through the maze. **Staple all work to this paper!**

$\sin \frac{x}{2} + \cos x = 1$   
[π/2, 2π]

$\tan^2 x = 4\sec^2 x - 7$   
[3π/2, 2π]

$\sqrt{2} \cos x = \sin 2x$   
[π/2, π]

$\csc^2 x + 3 = 1 - 3\csc x$   
[π, 3π/2]

End! 😊

$1 = 5 - 3\csc^2 x$   
[3π/2, 2π]

$\sin x + \cos 2x = \cos 4x$   
[π/2, π]

$4\sin^2 x - 2 = -\cos 2x$   
[π/2, π]

$\sin x = \cos^2 x - \sin^2 x$   
[π/2, 2π]

$\tan^2 x - 3\tan x = 3 - \tan^2 x$   
[π/2, π]

$7\tan x = \tan x - 2\sqrt{3}$   
[0, 3π/2]

$\sqrt{2} \cot x = -\cot x - \sec x$   
[π, 2π]

$4\cot x = \sqrt{3} \csc x + 2\cot x$   
[π/2, 2π]

$\sin 3x - \sin 5x = 0$   
[0, π/2]

$\cos(x - \pi) - \sin(x - \frac{3\pi}{2}) = 1$   
[π/2, π]

$-3 = 2\cos x - 4\cos \frac{x}{2}$   
[0, π]

$\sqrt{2} \sin x + 2\sin^2 x = 0$   
[0, π]

$3\sin^2 x = \sin^2 2x$   
[π, 3π/2]

Version 6: Mixed Equations (including Sum-to-Product Identities)

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