

Trig Identity Verifications

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| 1] $\cos \theta \sec \theta = 1$ | 2] $\tan \theta \cot \theta = 1$ |
| 3] $\sin \theta \sec \theta = \tan \theta$ | 4] $\sin \theta \cot \theta = \cos \theta$ |
| 5] $\frac{\csc x}{\sec x} = \cot x$ | 6] $\tan \beta \cos \beta = \sin \beta$ |
| 7] $\frac{\sin t}{\csc t} + \frac{\cos t}{\sec t} = 1$ | 8] $1 - 2\sin^2 u = 2\cos^2 u - 1$ |
| 9] $(1 + \sin \alpha)(1 - \sin \alpha) = \frac{1}{\sec^2 \alpha}$ | 10] $(1 - \sin^2 t)(1 + \tan^2 t) = 1$ |
| 11] $\frac{\csc^2 \theta}{1 + \tan^2 \theta} = \cot^2 \theta$ | 12] $\sin x + \cos x \cot x = \csc x$ |
| 13] $\sin t(\csc t - \sin t) = \cos^2 t$ | 14] $\cot t + \tan t = \csc t \sec t$ |
| 15] $\csc \theta - \sin \theta = \cot \theta \cos \theta$ | 16] $\cos \theta(\tan \theta + \cot \theta) = \csc \theta$ |
| 17] $\frac{\sec^2 u - 1}{\sec^2 u} = \sin^2 u$ | 18] $(\tan u + \cot u)(\cos u + \sin u) = \sec u + \csc u$ |
| 19] $(\cos^2 x - 1)(\tan^2 x + 1) = 1 - \sec^2 x$ | 20] $\frac{1 + \cos^2 y}{\sin^2 y} = 2\csc^2 y - 1$ |
| 21] $\sec^2 \theta \csc^2 \theta = \sec^2 \theta + \csc^2 \theta$ | 22] $\frac{\sec x - \cos x}{\tan x} = \frac{\tan x}{\sec x}$ |
| 23] $\frac{1 + \cos t}{\sin t} + \frac{\sin t}{1 + \cos t} = 2\csc t$ | 24] $\tan^2 \alpha - \sin^2 \alpha = \tan^2 \alpha \sin^2 \alpha$ |
| 25] $\frac{1 + \tan^2 v}{\tan^2 v} = \csc^2 v$ | 26] $\frac{\cos x \cot x}{\cot x - \cos x} = \frac{\cot x + \cos x}{\cos x \cot x}$ |
| 27] $(\sec u - \tan u)(\csc u + 1) = \cot u$ | 28] $\frac{\cot \theta - \tan \theta}{\sin \theta + \cos \theta} = \csc \theta - \sec \theta$ |
| 29] $\frac{\cot \alpha - 1}{1 - \tan \alpha} = \cot \alpha$ | 30] $\frac{1 + \sec \beta}{\tan \beta + \sin \beta} = \csc \beta$ |

- 31] $\cot^4 \theta + \csc^4 \theta = -\cot^2 \theta - \csc^2 \theta$ 32] $\cos^4 \theta + \sin^2 \theta = \sin^4 \theta + \cos^2 \theta$
- 33] $\frac{\cos \beta}{1 - \sin \beta} = \sec \beta + \tan \beta$ 34] $\frac{1}{\csc y - \cot y} = \csc y + \cot y$
- 35] $\frac{\tan^2 x}{\sec x + 1} = \frac{1 - \cos x}{\cos x}$ 36] $\frac{\cot x}{\csc x + 1} = \frac{\csc x - 1}{\cot x}$
- 37] $\frac{\cot u - 1}{\cot u + 1} = \frac{1 - \tan u}{1 + \tan u}$ 38] $\frac{1 + \sec x}{\sin x + \tan x} = \csc x$
- 39] $\sec^2 \gamma + \tan^2 \gamma = (1 + \sin^4 \gamma) \sec^4 \gamma$ 40] $\frac{\sin t}{1 - \cos t} = \csc t + \cot t$
- 41] $(\sin^2 \theta + \cos^2 \theta)^3 = 1$ 42] $\left(\frac{\sin^2 x}{\tan^4 x}\right)^3 \left(\frac{\csc^3 x}{\cot^6 x}\right)^2 = 1$
- 43] $\frac{\cos^3 x - \sin^3 x}{\cos x - \sin x} = 1 + \sin x \cos x$ 44] $\frac{\sin \theta + \cos \theta}{\tan^2 \theta - 1} = \frac{\cos^2 \theta}{\sin \theta - \cos \theta}$
- 45] $(\csc t - \cot t)^4 (\csc t + \cot t)^4 = 1$ 46] $(a \cos t - b \sin t)^2 + (a \sin t + b \cos t)^2 = a^2 + b^2$
- 47] $\sin^6 v + \cos^6 v = 1 - 3 \sin^2 v \cos^2 v$ 48] $\frac{\sin \alpha \cos \beta + \cos \alpha \sin \beta}{\cos \alpha \cos \beta - \sin \alpha \sin \beta} = \frac{\tan \alpha + \tan \beta}{1 - \tan \alpha \tan \beta}$
- 49] This one was busted 50] $-\ln |\sec u - \tan u| = \ln |\sec u + \tan u|$

