

Math 11U Trigonometric Identities

All of these identities use the reciprocal ratios, quotient identities, and/or the Pythagorean Identities.

$$1. \sin A \cot A = \cos A$$

$$2. \cos A \tan A = \sin A$$

$$3. \cot \theta \sec \theta = \csc \theta$$

$$4. \sin \theta \sec \theta = \tan \theta$$

$$5. \cos A \csc A = \cot A$$

$$6. \cot A \sec A \sin A = 1$$

$$7. (1 - \cos^2 A) \csc^2 A = 1$$

$$8. (1 - \sin^2 \theta) \sec^2 \theta = 1$$

$$9. \cot^2 \theta (1 - \cos^2 \theta) = \cos^2 \theta$$

$$10. (1 - \cos^2 A) \sec^2 A = \tan^2 A$$

$$11. (1 + \tan^2 A) \cos^2 A = 1$$

$$12. (\sec^2 A - 1) \cot^2 A = 1$$

$$13. (1 - \cos^2 \theta)(1 + \tan^2 \theta) = \tan^2 \theta$$

$$14. \sin^2 A (1 + \cot^2 A) = 1$$

$$15. (\csc^2 \theta - 1) \tan^2 \theta = 1$$

$$16. \sin^2 \theta \cot^2 \theta + \sin^2 \theta = 1$$

$$17. (1 - \cos^2 A)(1 + \cot^2 A) = 1$$

$$18. (1 + \tan^2 A)(1 - \sin^2 A) = 1$$

$$19. \sin^2 \theta \sec^2 \theta = \sec^2 \theta - 1$$

$$20. \csc^2 \theta \tan^2 \theta - 1 = \tan^2 \theta$$

$$21. \frac{1}{\sec^2 A} + \frac{1}{\csc^2 A} = 1$$

$$22. \frac{1}{\cos^2 \theta} - \frac{1}{\cot^2 \theta} = 1$$

$$23. \frac{\sin A}{\csc A} + \frac{\cos A}{\sec A} = 1$$

$$24. \frac{\sec A}{\cos A} - \frac{\tan A}{\cot A} = 1$$

$$25. \sin^4 \theta - \cos^4 \theta = 2 \sin^2 \theta - 1$$

$$26. \sec^4 \theta - 1 = 2 \tan^2 \theta + \tan^4 \theta$$

$$27. \csc^4 A - 1 = 2 \cot^2 A + \cot^4 A$$

$$28. (\tan A \csc A)^2 - (\sin A \sec A)^2 = 1$$

$$29. (\sec \theta \cot \theta)^2 - (\cos \theta \csc \theta)^2 = 1$$

$$30. \tan^2 \theta - \cot^2 \theta = \sec^2 \theta - \csc^2 \theta$$

$$31. \frac{\sin A \cot^2 A}{\cos A} = \frac{1}{\tan A}$$

$$32. \frac{\sec^2 A \cot A}{\csc^2 A} = \tan A$$

$$33. \sec \theta - \tan \theta \sin \theta = \cos \theta$$

$$34. \tan \theta + \cot \theta = \sec \theta \csc \theta$$

$$35. (\cos A + \sin A)^2 + (\cos A - \sin A)^2 = 2$$

$$36. (1 + \tan \theta)^2 + (1 - \tan \theta)^2 = 2 \sec^2 \theta$$

$$37. (\cot \theta - 1)^2 + (\cot \theta + 1)^2 = 2 \csc^2 \theta$$

$$38. \sin^2 \theta (1 - \cot \theta)^2 + \cos^2 \theta (1 + \tan \theta)^2 = 2$$

$$39. \cos^2 A (\sec^2 A - \tan^2 A) + \sin^2 A (\csc^2 A - \cot^2 A) = 1$$

$$40. \cot^2 A + \cot^4 A = \csc^4 A - \csc^2 A$$

$$41. \frac{\tan^2 \theta}{1 + \tan^2 \theta} \times \frac{1 + \cot^2 \theta}{\cot^2 \theta} = \sin^2 \theta \sec^2 \theta$$

$$42. \frac{1}{1 - \sin \theta} + \frac{1}{1 + \sin \theta} = 2 \sec^2 \theta$$

$$43. \frac{\tan A}{\sec A - 1} + \frac{\tan A}{\sec A + 1} = 2 \csc A$$

$$44. \frac{1}{1 + \sin^2 A} + \frac{1}{1 + \csc^2 A} = 1$$

$$45. (\sec \theta + \csc \theta)(\sin \theta + \cos \theta) = \sec \theta \csc \theta + 2$$

$$46. (\cos \theta - \sin \theta)(\csc \theta - \sec \theta) = \sec \theta \csc \theta - 2$$

$$47. (1 + \cot A + \csc A)(1 + \cot A - \csc A) = 2 \cot A$$

$$48. (\sec A + \tan A - 1)(\sec A - \tan A + 1) = 2 \tan A$$

$$49. (\sin A + \csc A)^2 + (\cos A + \sec A)^2 = \tan^2 A + \cot^2 A + 7$$

$$50. (\tan \theta + \sec \theta)^2 = \frac{1 + \sin \theta}{1 - \sin \theta}$$

$$51. \sin^4 \theta + 2 \cos^2 \theta - \cos^4 \theta = 1$$

$$52. (1 + \tan^2 A)(1 - \tan^2 A) = 2 \sec^2 A - \sec^4 A$$

$$53. \cos^3 A + \sin^3 A = (\cos A + \sin A)(1 - \sin A \cos A)$$

$$54. \sin^4 \theta - 2 \sin^2 \theta = \cos^4 \theta - 1$$

$$55. \frac{\sqrt{1 - \cos^2 \theta}}{\cos \theta} \times \sqrt{\sec^2 \theta - 1} = \tan^2 \theta$$

$$56. \frac{\cos A}{1 + \sin A} + \frac{1 + \sin A}{\cos A} = 2 \sec A$$

$$57. \sin^2 A \tan A + \cos^2 A \cot A + 2 \sin A \cos A = \tan A + \cot A$$