

Verify.

1. $\sin^2 \theta + \cos^2 \theta + \tan^2 \theta = \sec^2 \theta$

2. $(\tan x + \cot x)^2 = \sec^2 x + \csc^2 x$

3. $(\sin x - \cos x)^2 = 1 - 2 \sin x \cos x$

4. $\frac{\csc \theta}{\sec \theta} + \frac{\cos \theta}{\sin \theta} = 2 \cot \theta$

5. $\sin \theta \cos \theta (\tan \theta + \cot \theta) = 1$

6. $\tan \theta \sec \theta (\csc \theta - \sin \theta) = 1$

$$7. (\sec \theta + 1)(\sec \theta - 1) = \tan^2 \theta$$

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

$$9. \frac{\cos^4 \theta - \sin^4 \theta}{\cos \theta + \sin \theta} = \cos \theta - \sin \theta$$

$$10. 1 - \tan \theta = \frac{\cos \theta - \sin \theta}{\cos \theta}$$

$$11. \frac{1}{1 - \sin \theta} = \sec^2 \theta + \sec \theta \tan \theta$$

$$12. \sec^2 \theta - \csc^2 \theta = \frac{\tan \theta - \cot \theta}{\sin \theta \cos \theta}$$

$$13. \cot \theta + \tan \theta = \sec \theta \csc \theta$$

$$14. \csc \theta - \sin \theta = \cos \theta \cot \theta$$

$$15. \frac{\tan \theta \sin \theta}{\sec \theta - 1} = 1 + \cos \theta$$

$$16. \frac{\tan^2 \theta + 1}{\tan^2 \theta} = \csc^2 \theta$$

$$17. \sin \theta \cos \theta = \frac{1}{\tan \theta + \cot \theta}$$

$$18. \sec^4 \theta - \tan^4 \theta = \sec^2 \theta + \tan^2 \theta$$

$$19. \sec \theta + \csc \theta = \frac{1 + \tan \theta}{\sin \theta}$$

$$20. \frac{1}{1 + \cos \theta} = \csc^2 \theta - \csc \theta \cot \theta$$

$$21. \frac{\cot \theta + 2 \cos \theta}{\csc \theta - \sin \theta} = \sec \theta + 2 \tan \theta$$

$$22. \frac{1 + \sin x}{\cos x} = \frac{\cos x}{1 - \sin x}$$