

Trig Identities Worksheet 5.2

Prove Each Identity.

$$1. \frac{1 + \cos \beta}{\sin \beta} = \csc \beta + \cot \beta$$

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

$$3. \frac{\sec A}{\cos A} - \frac{\tan A}{\cot A} = 1$$

$$4. \csc^2 x \tan^2 x - 1 = \tan^2 x$$

$$5. \frac{\sec^2 y}{\sec^2 y - 1} = \csc^2 y$$

$$6. \tan^2 \alpha \sin^2 \alpha = \tan^2 \alpha - \sin^2 \alpha$$

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Prove Each Identity.

$$7. \frac{1 - \tan^2 \alpha}{1 + \tan^2 \alpha} = 1 - 2\sin^2 \alpha$$

$$8. \frac{\cos A + 1}{\sin^3 A} = \frac{\csc A}{1 - \cos A}$$

$$9. (\sin \theta + \cos \theta)^2 + (\sin \theta - \cos \theta)^2 = 2$$

$$10. \csc^4 x - \cot^4 x = \csc^2 x + \cot^2 x$$

$$11. \frac{\tan \beta}{\sec \beta} + \frac{\cot \beta}{\csc \beta} = \sin \beta + \cos \beta$$

$$12. \frac{\sin y + \tan y}{1 + \sec y} = \sin y$$