

1. $\tan x \cot x = 1$

$$\frac{\sin x \cdot \cos x}{\cos x \cdot \sin x} = 1$$

$1 = 1$
✓

2. $\cos x \sec x = 1$

$$\cos x \cdot \frac{1}{\cos x} = 1$$

$1 = 1$
✓

3. $\tan x \cos x = \sin x$

$$\frac{\sin x}{\cos x} \cdot \cos x = \sin x$$

$\sin x = \sin x$
✓

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

$$\frac{\cos A}{\sin A} \cdot \sin A = \cos A$$

$\cos A = \cos A$
✓

5. $\cot x \cdot \sec x \cdot \sin x = 1$

$$\frac{\cos x}{\sin x} \cdot \frac{1}{\cos x} \cdot \sin x = 1$$

$1 = 1$
✓

6. $(1 + \sin x)(1 - \sin x) = \cos^2 x$

$$1^2 - \sin^2 x = \cos^2 x$$

$$+ \sin^2 x \quad + \sin^2 x$$

$$1 = \cos^2 x + \sin^2 x$$

✓

7. $(1 + \cos x)(1 - \cos x) = \sin^2 x$

$$1^2 - \cos^2 x = \sin^2 x$$

$$+ \cos^2 x \quad + \cos^2 x$$

$$1 = \sin^2 x + \cos^2 x$$

✓

8. $(\sec x + \tan x)(\sec x - \tan x) = 1$

$$\sec^2 x - \tan^2 x = 1$$

$$+ \tan^2 x \quad + \tan^2 x$$

$$\sec^2 x = 1 + \tan^2 x$$

✓

9. $\sin^2 x - \cos^2 x = 2 \sin^2 x - 1$

$$2 \sin^2 x - \sin^2 x - \cos^2 x$$

$$= \sin^2 x - \cos^2 x$$

$1 = 1$
✓

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

$$\frac{\sin^2 A}{\sin A \cos A} + \frac{\cos^2 A}{\sin A \cos A} =$$

$$\frac{1}{\sin A \cos A} = \csc A \cdot \sec A$$

✓

11. $\frac{\sec^2 x - 1}{\sec^2 x} = \sin^2 x$

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

$$\cos^2 x \left(\frac{1}{\cos^2 x} - \frac{\cos^2 x}{\cos^2 x} \right) = \sin^2 x$$

$$\cos^2 x \left(\frac{1}{\cos^2 x} - \frac{\cos^4 x}{\cos^2 x} \right) = \sin^2 x$$

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

$$1 = \cos^2 x + \sin^2 x$$

✓

12. $\frac{\tan B + \cot B}{\tan B} = \csc^2 B$

$$\frac{\tan B}{\tan B} + \frac{\cot B}{\tan B} =$$

$$1 + \frac{\cos^4 B \cdot \cos B}{\sin B \cdot \sin^3 B} =$$

$$1 + \frac{\cos^2 B}{\sin^2 B}$$

$$+ \tan^2 B = \csc^2 B$$

$$\csc^2 B = \csc^2 B$$

✓