

14-1 1

$$1 \quad \sin \theta \operatorname{sec} \theta \cot \theta = \boxed{1}$$

$$\frac{\sin \theta \cdot 1 \cdot \cot \theta}{\cos \theta \cdot \sin \theta}$$

$\boxed{1}$

$$3 \quad \frac{\sin \theta}{\csc \theta} = \boxed{\sin^2 \theta}$$

$$\frac{\sin \theta}{\frac{1}{\sin \theta}} \rightarrow \sin \theta \left(\frac{\sin \theta}{1} \right) = \boxed{\sin^2 \theta}$$

$$5 \quad \sin \theta \tan \theta + \cos \theta = \boxed{\sec \theta}$$
$$\frac{\sin \theta \sin \theta}{\cos \theta} + \cos \theta$$

$$\frac{\sin^2 \theta}{\cos \theta} + \cos \theta \left(\frac{\cos \theta}{\cos \theta} \right)$$

$$\frac{\sin^2 \theta}{\cos \theta} + \frac{\cos^2 \theta}{\cos \theta} \rightarrow \frac{1}{\cos \theta} \rightarrow \boxed{\sec \theta}$$

$$7 \quad \boxed{\sec \theta} = \tan \theta \csc \theta$$
$$= \frac{\sin \theta}{\cos \theta} \cdot \frac{1}{\sin \theta}$$
$$= \frac{1}{\cos \theta}$$
$$\boxed{\sec \theta}$$

$$9. \tan^2 \theta + 1 = \boxed{\sec^2 \theta}$$

$$\frac{\sin^2 \theta}{\cos^2 \theta} + \frac{\cos^2 \theta}{\cos^2 \theta}$$

$$\frac{1}{\cos^2 \theta}$$

$$\boxed{\sec^2 \theta}$$

$$11. \frac{\sec \theta}{\csc \theta} = \boxed{\tan \theta}$$

$$\frac{\frac{1}{\cos \theta}}{\frac{1}{\sin \theta}} \rightarrow \frac{1}{\cos \theta} \rightarrow \frac{\sin \theta}{1} \rightarrow \frac{\sin \theta}{\cos \theta} \rightarrow \boxed{\tan \theta}$$

$$13. \sec^2 \theta - \tan^2 \theta = \boxed{1}$$

$$\frac{1}{\cos^2 \theta} - \frac{\sin^2 \theta}{\cos^2 \theta}$$

$$\frac{1 - \sin^2 \theta}{\cos^2 \theta}$$

$$\frac{\cos^2 \theta + \cancel{\sin^2 \theta} - \cancel{\sin^2 \theta}}{\cos^2 \theta}$$

$$\frac{\cos^2 \theta}{\cos^2 \theta} \rightarrow \boxed{1}$$

$$15. \frac{\sin \theta + \cos \theta}{\sin \theta} = \boxed{1 + \cot \theta}$$

$$\frac{\sin \theta}{\sin \theta} + \frac{\cos \theta}{\sin \theta}$$

$$\boxed{1 + \cot \theta}$$

$$17. \cot \theta \sec \theta = \boxed{\csc \theta}$$

$$\frac{\cancel{\cos \theta}}{\sin \theta} \cdot \frac{1}{\cancel{\cos \theta}}$$

$$\frac{1}{\sin \theta} \rightarrow \boxed{\csc \theta}$$

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

$$1 - \frac{1}{\cos^2 \theta} \rightarrow \frac{\cos^2 \theta}{\cos^2 \theta} - \frac{1}{\cos^2 \theta}$$

$$\frac{\cancel{\cos^2 \theta} - (\cancel{\sin^2 \theta} + \cancel{\cos^2 \theta})}{\cos^2 \theta}$$

$$\frac{-\cancel{\sin^2 \theta}}{\cos^2 \theta} \rightarrow \boxed{-\tan^2 \theta}$$

$$21. \csc \theta \tan \theta \rightarrow \frac{1}{\sin \theta} \cdot \frac{\sin \theta}{\cos \theta} \rightarrow \frac{1}{\cos \theta} \rightarrow \boxed{\sec \theta}$$

$$23. \csc^2 \theta - \cot^2 \theta \rightarrow \frac{1}{\sin^2 \theta} - \frac{\cos^2 \theta}{\sin^2 \theta} \rightarrow$$

$$\frac{1 - \cos^2 \theta}{\sin^2 \theta} \rightarrow \frac{\sin^2 \theta + \cancel{\cos^2 \theta} - \cos^2 \theta}{\sin^2 \theta}$$

$$\rightarrow \boxed{1}$$

$$25. \tan \theta \cot \theta \rightarrow \left(\frac{\sin \theta}{\cos \theta} \right) \left(\frac{\cos \theta}{\sin \theta} \right) = \boxed{1}$$

$$27. \cos \theta \tan \theta \rightarrow \frac{\cos \theta}{1} \frac{\sin \theta}{\cos \theta} \rightarrow \boxed{\sin \theta}$$

$$29. \sec \theta \tan \theta \csc \theta \rightarrow$$

$$\frac{1}{\cos \theta} \frac{\sin \theta}{\cos \theta} \frac{1}{\sin \theta} \rightarrow \frac{1}{\cos^2 \theta} \rightarrow \boxed{\sec^2 \theta}$$

$$31. \frac{\sin \theta}{\csc \theta} + \frac{\cos \theta}{\sec \theta} \rightarrow \frac{\sin \theta}{\frac{1}{\sin \theta}} + \frac{\cos \theta}{\frac{1}{\cos \theta}}$$

$$\rightarrow \sin \theta \left(\frac{\sin \theta}{1} \right) + \cos \theta \left(\frac{\cos \theta}{1} \right)$$

$$\sin^2 \theta + \cos^2 \theta = \boxed{1}$$

$$33. \cot^2 \theta - \csc^2 \theta$$

$$\frac{\cos^2 \theta}{\sin^2 \theta} - \frac{1}{\sin^2 \theta} \rightarrow \frac{\cos^2 \theta - 1}{\sin^2 \theta}$$

$$\rightarrow \frac{\cos^2 \theta - (\sin^2 \theta + \cos^2 \theta)}{\sin^2 \theta} = \frac{-\sin^2 \theta}{\sin^2 \theta} = -1$$