

$$19) \frac{1 - 2\csc\theta}{\cot\theta} = \tan\theta - 2\sec\theta$$

$$\frac{1}{\cot\theta} - \frac{2\csc\theta}{\cot\theta} = \tan\theta - 2\sec\theta \quad \frac{2}{\sin\theta} \div \frac{\cos\theta}{\sin\theta}$$

$$\frac{2\csc\theta}{2} \div \cot\theta$$

$$\frac{2}{\sin\theta} \cdot \frac{\sin\theta}{\cos\theta}$$

$$\frac{1}{\cot\theta} - \frac{2}{\cos\theta} = \tan\theta - 2\sec\theta \quad \checkmark$$

$$20) \frac{\sec^2\theta - 1}{\tan\theta} = \tan\theta$$

$$\frac{\tan^2\theta}{\tan\theta} = \tan\theta$$

$$\tan\theta = \tan\theta \quad \checkmark$$

$$21) \frac{\sin\theta + \cos\theta \cdot \cot\theta}{\sin\theta + \cos\theta \cdot \frac{\cos\theta}{\sin\theta}} = \csc\theta$$

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

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

$$\frac{1}{\sin\theta} = \csc\theta \quad \checkmark$$

$$22) \cos\theta(\csc\theta - \sec\theta) = \cot\theta - 1$$

$$\cos\theta \csc\theta - 1$$

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

$$\frac{\cos\theta}{\sin\theta} - 1 = \cot\theta - 1$$

$$\cot\theta - 1 = \cot\theta - 1$$

$$23) \frac{\cos \theta}{1 - \sin^2 \theta} = \sec \theta$$

$$\frac{\cos \theta}{\cos^2 \theta} = \sec \theta$$

$$\frac{1}{\cos \theta} = \sec \theta \quad \checkmark$$

$$24) \tan^2 \theta - \tan^2 \theta \sin^2 \theta = \sin^2 \theta$$

$$\tan^2 \theta (1 - \sin^2 \theta) = \sin^2 \theta$$

$$\tan^2 \theta \cdot \cos^2 \theta = \sin^2 \theta$$

$$\frac{\sin^2 \theta \cdot \cos^2 \theta}{\cos^2 \theta} = \sin^2 \theta$$

$$\sin^2 \theta = \sin^2 \theta \quad \checkmark$$

$$25) \frac{\cot \theta}{1 + \cot \theta} = \sin \theta \cos \theta$$

$$\frac{\cot \theta}{\csc^2 \theta} = \sin \theta \cos \theta$$

$$\frac{\cos \theta}{\sin \theta} \div \frac{1}{\sin^2 \theta} = \sin \theta \cos \theta$$

$$\frac{\cos \theta \cdot \sin^2 \theta}{\sin \theta} = \sin \theta \cos \theta$$

$$\cos \theta \sin \theta = \sin \theta \cos \theta \quad \checkmark$$

$$26) \frac{1 + \tan^2 \theta}{\cos^2 \theta} = \sec^4 \theta$$

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

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

$$\frac{1}{\cos^2 \theta} \cdot \frac{1}{\cos^2 \theta} = \frac{1}{\cos^4 \theta} = \sec^4 \theta \quad \checkmark$$

$$\star 27) \frac{\sin\theta + \cos\theta}{\sin\theta\cos\theta} = \sec\theta + \csc\theta$$

$$\frac{\sin\theta}{\sin\theta\cos\theta} + \frac{\cos\theta}{\sin\theta\cos\theta} = \sec\theta + \csc\theta$$

$$\frac{1}{\cos\theta} + \frac{1}{\sin\theta} = \sec\theta + \csc\theta \quad \checkmark$$

$$\star 28) \frac{\sec\theta + \tan\theta}{\cos\theta + \cot\theta} = \sin\theta \sec^2\theta$$

$$\frac{1 + \sin\theta}{\cos\theta \cos\theta}$$

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

$$\frac{1 + \sin\theta}{\cos\theta} \div \frac{\sin\theta \cos\theta + \cos\theta}{\sin\theta}$$

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

$$\frac{1 + \sin\theta}{\cos\theta} \cdot \frac{\sin\theta}{\cos\theta(\sin\theta + 1)}$$

$$\frac{\sin\theta}{\cos^2\theta} = \sin\theta \sec^2\theta \quad \checkmark$$

$$\star 29) \frac{(1 + \sin \theta)(1 + \sin \theta)}{(1 + \sin \theta)(1 - \sin \theta)} = \frac{1 + \sin \theta}{1 - \sin \theta}$$

$$\frac{1 + \sin \theta}{1 - \sin \theta} = \frac{1 + \sin \theta}{1 - \sin \theta}$$

$$\checkmark 30) \frac{1}{\cos \theta} + \frac{1}{\cos \theta} = \csc \theta$$

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

$$\frac{\cos \theta + 1}{\cos \theta}$$

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

$$\frac{\cos \theta + 1}{\cos \theta} \div \frac{\sin \theta + \sin \theta \cos \theta}{\cos \theta}$$

$$\frac{\cos \theta + 1}{\cos \theta} \cdot \frac{\cos \theta}{\sin \theta (1 + \cos \theta)}$$

$$\frac{1}{\sin \theta} = \csc \theta \quad \checkmark$$

$$31) \csc \theta \cos^2 \theta + \sin \theta = \csc \theta$$

$$\frac{1}{\sin \theta} \cdot \cos^2 \theta + \frac{\sin \theta \sin \theta}{1 \sin \theta} = \csc \theta$$

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

$$\frac{1}{\sin \theta} = \csc \theta \quad \checkmark$$

$$32) \frac{\csc^2 \theta}{\csc^2 \theta - 1} = \sec^2 \theta$$

$$\frac{\csc^2 \theta}{\cot^2 \theta} = \sec^2 \theta$$

$$\frac{1}{\sin^2 \theta} \div \frac{\cos^2 \theta}{\sin^2 \theta} = \sec^2 \theta$$

$$\frac{1}{\cancel{\sin^2 \theta}} \cdot \frac{\cancel{\sin^2 \theta}}{\cos^2 \theta} = \sec^2 \theta$$

$$\frac{1}{\cos^2 \theta} = \sec^2 \theta \quad \checkmark$$

$$33) \sin \theta / \left( \frac{\cot \theta}{\sec \theta} + \csc \theta \right) = \cos^2 \theta + 1$$

$$\sin \theta \frac{\cot \theta}{\sec \theta} + 1 = \cos^2 \theta + 1$$

$$\sin \theta \cdot \frac{\cos \theta}{\sin \theta} \div \frac{1}{\cos \theta} + 1$$

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

$$\cos^2 \theta + 1 = \cos^2 \theta + 1$$

$$34) \frac{2 \cos^2 \theta - \sin^2 \theta + 1}{\cos \theta} = 3 \cos \theta$$

$$\frac{2 \cos^2 \theta - (1 - \cos^2 \theta) + 1}{\cos \theta} = 3 \cos \theta$$

$$\frac{2 \cos^2 \theta - 1 + \cos^2 \theta + 1}{\cos \theta} = 3 \cos \theta$$

$$34) \text{ continued: } \frac{3\cos^2\theta}{\cos\theta} = 3\cos\theta$$

$$3\cos\theta = 3\cos\theta$$

$$35) \csc\theta - \sin\theta = \cot\theta \cos\theta$$

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

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

$$\frac{\cos^2\theta}{\sin\theta} = \frac{\cos^2\theta}{\sin\theta} \quad \checkmark$$

$$36) \frac{1(1+\cos\theta)}{1-\cos\theta} \cdot \frac{1(1-\cos\theta)}{1+\cos\theta} = 2\csc^2\theta$$

$$\frac{1 + \cos\theta + 1 - \cos\theta}{(1 - \cos\theta)(1 + \cos\theta)}$$

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

$$\frac{2}{\sin^2\theta} = 2\csc^2\theta$$

$$2 \cdot \frac{1}{\sin^2\theta} = 2\csc^2\theta$$