

$$1. \sin \theta \csc \theta = 1$$

$$1 = 1 \quad \checkmark$$

$$2. \cot \theta \sin \theta = \cos \theta$$

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

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

$$3. \tan \theta \csc \theta = \sec \theta$$

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

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

$$4. \tan^2 \theta \cos^2 \theta = \sin^2 \theta$$

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

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

$$5. \cos \theta \csc \theta \tan \theta = 1$$

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

$$1 = 1 \quad \checkmark$$

$$6. \frac{\sin^2 \theta}{1 - \cos^2 \theta} = 1$$

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

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

$$1 = 1 \quad \checkmark$$

$$7. \sin \theta (\csc \theta - \sin \theta) = \cos^2 \theta$$

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

$$\cos^2 \theta = \cos^2 \theta$$

$$8. \frac{1 + \tan^2 \theta}{\tan^2 \theta} = \csc^2 \theta$$

$$\frac{1 + \tan^2 \theta}{\tan^2 \theta}$$

$$\begin{aligned} \checkmark \quad \theta_2 + 0 &= \theta_2 + 0 \\ & \frac{a_2 \sin \theta}{\sin 2\theta} \\ \theta_2 + 0 &= \frac{a_2 \cos \theta}{a_2 \cos \theta - 1} \\ \theta_2 + 0 &= \frac{1 - \cos 2\theta}{\sin 2\theta} \quad (11) \end{aligned}$$

$$\checkmark \quad \theta_2 + 0 = \theta_2 + 0$$

$$1 + \cos \theta = 1 - \cos \theta + 1$$

$$\theta_2 + 0 = 1 - \frac{1 - \cos \theta}{1 - \cos \theta + 1} (1 - \cos \theta) (1 + \cos \theta)$$

$$\theta_2 + 0 = 1 - \frac{1 - \cos \theta}{1 - \cos 2\theta - 1} \quad (10)$$

$$\checkmark \quad 1 = \frac{\frac{a_2 \sin \theta}{\sin 2\theta}}{\frac{a_2 \sin \theta}{a_2 \cos \theta} - \frac{\sin 2\theta}{1}}$$

$$1 = \frac{\frac{a_2 \sin \theta}{a_2 \cos \theta} \cdot \frac{a_2 \sin \theta}{a_2 \cos \theta}}{\frac{a_2 \sin \theta}{a_2 \cos \theta} - \frac{\sin 2\theta}{1}}$$

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

$$\theta_2 + 0 = \frac{\sin 2\theta}{1} = \cos 2\theta$$

$$\theta_2 + 0 = \frac{\frac{\sin 2\theta}{\cos 2\theta} \cdot \frac{\cos 2\theta}{1}}{\frac{\sin 2\theta}{\cos 2\theta} - \frac{\cos 2\theta}{1}}$$

$$\theta_2 + 0 = \frac{\tan 2\theta}{\sec 2\theta} = \cos 2\theta$$

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

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

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

$$\tan \theta = \frac{(\theta \cos \theta) \frac{1}{\cos \theta} + \frac{\theta \cos \theta}{\sin \theta}}{\frac{1 + \cos \theta}{\sin \theta + \cos \theta}} \quad (1)$$

$$(1) \tan \theta + 1 = 1 + \tan \theta \quad (2)$$

$$\theta \cos \theta - \sin \theta = \theta \cos \theta - \sin \theta$$

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

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

$$\theta \cos \theta - \sin \theta = \frac{\theta \cos \theta}{\cos \theta} - \frac{\sin \theta}{\sin \theta} \quad (3)$$

$$\theta \cos \theta = \sin \theta$$

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

$$\theta \cos \theta = \frac{1}{\sin \theta} \quad (4)$$

$$\theta_2 \cos \theta - \theta_2 \sin \theta = \theta_2 \cos \theta - \theta_2 \sin \theta$$

$$\theta_2 \cos \theta - \theta_2 \sin \theta = (\theta_2 \cos \theta - \theta_2 \sin \theta) \cdot 1$$

$$\theta_2 \cos \theta - \theta_2 \sin \theta = (\theta_2 \cos \theta - \theta_2 \sin \theta) (\theta_2 \cos \theta + \theta_2 \sin \theta)$$

$$\theta_2 \cos \theta - \theta_2 \sin \theta = \theta_2 \cos \theta - \theta_2 \sin \theta \quad (5)$$

$$\begin{aligned} \checkmark \quad 5 \cos 2\theta &= \theta - \theta \sin 2\theta \\ 5(1 + \cos 2\theta) &= 5 \cos 2\theta \\ 5 + 5 \cos 2\theta &= \theta + \theta \sin 2\theta \end{aligned}$$

18. $(2 - \cos \theta)^2 + (1 + 2 \cos \theta)^2 = 5 \cos 2\theta$

2	4	2
2	4	2
2	4	2

2	4	2
2	4	2
2	4	2

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

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

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

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

17. $\sec \theta \cos \theta = \cos \theta$

$$\frac{\cos \theta}{\cos \theta} = \frac{\cos \theta}{\cos \theta}$$