

# AKSHAYA EDUCATIONAL FOUNDATION

## TRIGNOMETRY WORK SHEET 5

$$1. \left( \tan \theta + \frac{1}{\cos \theta} \right)^2 + \left( \tan \theta - \frac{1}{\cos \theta} \right)^2 = 2 \left( \frac{1 + \sin^2 \theta}{1 - \sin^2 \theta} \right)$$

$$2. \left( \frac{1}{\sec^2 \theta - \cos^2 \theta} + \frac{1}{\operatorname{cosec}^2 \theta - \sin^2 \theta} \right) \sin^2 \theta \cos^2 \theta = \frac{1 - \sin^2 \theta \cos^2 \theta}{2 + \sin^2 \theta \cos^2 \theta}$$

$$3. \text{(i)} \left( \frac{1 + \sin \theta - \cos \theta}{1 + \sin \theta + \cos \theta} \right)^2 = \frac{1 - \cos \theta}{1 + \cos \theta}$$

$$\text{(ii)} \frac{1 + \sec \theta - \tan \theta}{1 + \sec \theta + \tan \theta} = \frac{1 - \sin \theta}{\cos \theta}$$

$$4. (\sec A + \tan A - 1)(\sec A - \tan A + 1) = 2 \tan A$$

$$5. (1 + \cot A - \operatorname{cosec} A)(1 + \tan A + \sec A) = 2$$

$$6. (\operatorname{cosec} \theta - \sec \theta)(\cot \theta - \tan \theta) = (\operatorname{cosec} \theta + \sec \theta)(\sec \theta \operatorname{cosec} \theta - 2)$$

$$7. (\sec A - \operatorname{cosec} A)(1 + \tan A + \cot A) = \tan A \sec A - \cot A \operatorname{cosec} A$$

$$8. \frac{\cos A \operatorname{cosec} A - \sin A \sec A}{\cos A + \sin A} = \operatorname{cosec} A - \sec A$$

$$9. \frac{\sin A}{\sec A + \tan A - 1} + \frac{\cos A}{\operatorname{cosec} A + \cot A - 1} = 1$$

$$10. \frac{\tan A}{(1 + \tan^2 A)^2} + \frac{\cot A}{(1 + \cot^2 A)^2} = \sin A \cos A$$