

11U – Trigonometric Identities Practice

Prove each identity

$$1. \frac{\sin(\theta)}{\cos(\theta) \cdot \tan(\theta)} = 1$$

$$2. \sin(x) \cdot \tan(x) = \frac{1 - \cos^2(x)}{\cos(x)}$$

$$3. \frac{\sin(\phi)}{1 + \cos(\phi)} = \frac{1 - \cos(\phi)}{\sin(\phi)} \text{ (this one is quite tricky)}$$

$$4. \frac{\sin^2(x)}{\tan^2(x)} = 1 - \sin^2(x)$$

$$5. \sin^2(\theta) = \frac{\tan^2(\theta)}{1 + \tan^2(\theta)}$$

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

$$7. \frac{1}{\cos^2(x)} + \frac{1}{\sin^2(x)} = \csc^2(x) \cdot \sec^2(x)$$

$$8. \tan(\alpha) + \frac{1}{\tan(\alpha)} = \csc(\alpha) \cdot \sec(\alpha)$$

$$9. (\cos(\theta) - \sin(\theta))^2 = 1 - 2 \sin(\theta) \cdot \cos(\theta)$$

$$10. \cos^4(\phi) - \sin^4(\phi) = 1 - 2\sin^2(\phi)$$

$$11. \frac{\tan^2(z)}{1+\tan^2(z)} = 1 - \cos^2(z)$$

$$12. \frac{\tan(\theta) + \cot(\theta)}{\sin(\theta)} = \sec(\theta) + \cot(\theta)$$

(this one may throw you a little)