

Prove:

$$1) \frac{\tan(\theta)}{\tan(\theta) - \cos(\theta)} = \frac{\sec(\theta)}{\sec(\theta) - \cot(\theta)}$$

$$2) \frac{1}{\cos(\alpha) + 1} + \frac{1}{\sec(\alpha) + 1} = 1$$

$$3) \frac{\sec(w)}{\csc(w)} + \frac{\sin(w)}{\cos(w)} = 2\tan(w)$$

$$4) \cot(\alpha)\tan(\alpha) = 1$$

$$5) \frac{\cot^2(y) - 4}{\cot(y) - 2} = \cot(y) + 2$$

$$6) \cos^2(v) - \cos^4(v) = \cos^2(v)\sin^2(v)$$

$$7) 1 - \frac{\cos^2(-\theta)}{1 + -\sin(-\theta)} = \sin(\theta)$$

$$8) \csc^2(\pi/2 - \beta)(1 - \cos^2(\pi/2 - \beta)) = 1$$

Prove:

$$9) \frac{1 - \cos(y)}{1 + \cos(y)} = \frac{\sec(y) - 1}{\sec(y) + 1}$$

$$10) \csc^2(\phi)(1 - \cos^2(\phi)) = 1$$

$$11) \frac{\tan(u)}{\sec(u)} = \sin(u)$$

$$12) \frac{1 + \tan(v)}{1 - \tan(v)} = \frac{\cot(v) + 1}{\cot(v) - 1}$$

$$13) \frac{\tan^3(x)}{\sec(x)} = \sin(x)(\sec^2(x) - 1)$$

$$14) \frac{\tan(\beta) + \cot(\beta)}{\tan(\beta)} = \csc^2(\beta)$$