① a)

LS	RS
$= \sin\theta$	$= \cos\theta \tan\theta$
	$= \cos\theta \left(\frac{\sin\theta}{\cos\theta}\right)$
	$= \sin\theta$

$$LS = RS$$

b)

LS	RS
$= \csc\theta$	$= \sec\theta \cot\theta$
$= \frac{1}{\sin\theta}$	$= \frac{1}{\cos\theta}\left(\frac{1}{\tan\theta}\right)$
	$= \frac{1}{\cos\theta}\left(\frac{\sin\theta}{\cos\theta}\right)$
	$= \frac{1}{\cos\theta}\left(\frac{\cos\theta}{\sin\theta}\right)$
	$= \frac{1}{\sin\theta}$

$$LS = RS$$

c)

LS	RS
$= \cos\theta$	$= \sin\theta \cot\theta$
	$= \sin\theta\left(\frac{1}{\tan\theta}\right)$
	$= \sin\theta\left(\frac{1}{\frac{\sin\theta}{\cos\theta}}\right)$
	$= \sin\theta\left(\frac{\cos\theta}{\sin\theta}\right)$
	$= \cos\theta$

$$LS = RS$$

d)

LS	RS
$= \sec\theta$	$= \csc\theta \tan\theta$
$= \frac{1}{\cos\theta}$	$= \left(\frac{1}{\sin\theta}\right)\left(\frac{\sin\theta}{\cos\theta}\right)$
	$= \frac{1}{\cos\theta}$

$$LS = RS$$

② a)

LS	RS
$= 1 + \csc\theta$	$= \csc\theta(1 + \sin\theta)$
	$= \csc\theta + \csc\theta \sin\theta$
	$= \csc\theta + \left(\frac{1}{\sin\theta}\right)\sin\theta$
	$= \csc\theta + 1$

$$LS = RS$$

b)

LS	RS
$= \cot\theta \sin\theta \sec\theta$	$= 1$
$= \left(\frac{\cos\theta}{\sin\theta}\right)\sin\theta\left(\frac{1}{\cos\theta}\right)$	
$= \frac{\cos\theta}{\cos\theta}$	
$= 1$	

$$LS = RS$$

c)

LS	RS
$= \cos\theta(\sec\theta - 1)$	$= 1 - \cos\theta$
$= \cos\theta \sec\theta - \cos\theta$	
$= \cos\theta\left(\frac{1}{\cos\theta}\right) - \cos\theta$	
$= 1 - \cos\theta$	

$$LS = RS$$

d)

LS	RS
$= 1 + \sin\theta$	$= \sin\theta(1 + \csc\theta)$
	$= \sin\theta + \sin\theta \csc\theta$
	$= \sin\theta + \sin\theta\left(\frac{1}{\sin\theta}\right)$
	$= \sin\theta + 1$

$$LS = RS$$

(3)

LS	RS
$= 1 - \sin^2\theta$	$= \sin\theta\cos\theta\cot\theta$
$= \sin^2\theta + \cos^2\theta - \sin^2\theta$	$= \sin\theta\cos\theta\left(\dfrac{\cos\theta}{\sin\theta}\right)$
$= \cos^2\theta$	$= \cos^2\theta$

$$LS = RS$$

(4)

LS	RS
$= \csc^2\theta$	$= \cot^2\theta + 1$
$= \dfrac{1}{\sin^2\theta}$	$= \dfrac{\cos^2\theta}{\sin^2\theta} + \dfrac{\sin^2\theta}{\sin^2\theta}$
	$= \dfrac{\cos^2\theta + \sin^2\theta}{\sin^2\theta}$
	$= \dfrac{1}{\sin^2\theta}$

$$LS = RS$$

(5)

LS	RS
$= \dfrac{\cos\theta}{1 + \sin\theta}$	$= \dfrac{1 - \sin\theta}{\cos\theta}$
$= \dfrac{\cos\theta}{1 + \sin\theta} \times \dfrac{1 - \sin\theta}{1 - \sin\theta}$	
$= \dfrac{\cos\theta(1 - \sin\theta)}{1 - \sin^2\theta}$	
$= \dfrac{\cos\theta(1 - \sin\theta)}{\cos^2\theta}$	
$= \dfrac{1 - \sin\theta}{\cos\theta}$	

$$LS = RS$$

(6)

LS	RS
$= \dfrac{\cos\theta}{1 - \sin\theta} + \dfrac{\cos\theta}{1 + \sin\theta}$	$= \dfrac{2}{\cos\theta}$
$= \dfrac{\cos\theta(1 + \sin\theta) + \cos\theta(1 - \sin\theta)}{(1 - \sin\theta)(1 + \sin\theta)}$	
$= \dfrac{\cos\theta + \cos\theta\sin\theta + \cos\theta - \cos\theta\sin\theta}{1 - \sin^2\theta}$	
$= \dfrac{2\cos\theta}{\cos^2\theta}$	
$= \dfrac{2}{\cos\theta}$	

$$LS = RS$$

7 | LS | RS

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

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

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

| RS

$$= \csc^2\theta - 1$$

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

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

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

$$LS = RS$$

8 | LS | RS

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

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

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

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

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

| RS

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

$$LS = RS$$