

$$14. \text{ a) } \sec x - \cos x = \sin x \tan x$$

$$\frac{1}{\cos x} - \cos x = \sin x \tan x$$

$\cos x$

$$\frac{1}{\cos x} - \cos x \left(\frac{\cos x}{\cos x} \right) = \sin x \tan x$$

$$\frac{1 - \cos^2 x}{\cos x} = \sin x \tan x$$

$$\frac{\sin^2 x}{\cos x} = \sin x \tan x$$

$$\frac{\sin x \cdot \cancel{\sin x}}{\cos x} = \sin x \tan x$$

$$\sin x \cdot \tan x = \sin x \cdot \tan x$$

$$\text{b) } \frac{1 + \sin x}{\cos x} = \frac{\cos x}{1 - \sin x}$$

$$\left(\frac{1 - \sin x}{1 - \sin x} \right) \frac{1 + \sin x}{\cos x} = \frac{\cos x}{1 - \sin x}$$

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

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

$$\frac{\cos x}{1 - \sin x} = \frac{\cos x}{1 - \sin x}$$

$$c) \frac{\sin^2 x}{1 - \cos x} = 1 + \cos x$$

diff.
of squares

$$\frac{1 - \cos^2 x}{1 - \cos x} = 1 + \cos x$$

$$\frac{(1 + \cos x)(1 - \cos x)}{1 - \cos x} = 1 + \cos x$$

$$1 + \cos x = 1 + \cos x$$

$$d) (1 + \tan x)^2 + (1 - \tan x)^2 = 2 \sec^2 x$$

$$1 + 2\tan x + \tan^2 x + 1 - 2\tan x + \tan^2 x = 2 \sec^2 x$$

$$2 + 2\tan^2 x = 2 \sec^2 x$$

$$2(1 + \tan^2 x) = 2 \sec^2 x$$

$$2 \sec^2 x = 2 \sec^2 x$$

$$e) (1 + \tan x)(1 - \tan x) - (1 + \cot x)(1 - \cot x) = \frac{1 - \tan^4 x}{\tan^2 x}$$

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

$$-\tan^2 x + \cot^2 x = \frac{1 - \tan^4 x}{\tan^2 x}$$

$$\cot^2 x - \tan^2 x = \frac{1 - \tan^4 x}{\tan^2 x}$$

$$\frac{1}{\tan^2 x} - \tan^2 x = \frac{1 - \tan^4 x}{\tan^2 x}$$

$$\frac{1}{\tan^2 x} - \tan^2 x \left(\frac{\tan^2 x}{\tan^2 x} \right) = \frac{1 - \tan^4 x}{\tan^2 x}$$

$$\frac{1}{\tan^2 x} - \frac{\tan^4 x}{\tan^2 x} = \frac{1 - \tan^4 x}{\tan^2 x}$$

$$\frac{1 - \tan^4 x}{\tan^2 x} = \frac{1 - \tan^4 x}{\tan^2 x}$$