

$$1) \sin x \csc x = 1$$

$$\cancel{\sin x} \frac{1}{\cancel{\sin x}}$$

$$1 = 1$$

$$3) \frac{\csc^2 x}{\cot x} = \csc x \sec x$$

$$\frac{1 + \cot^2 x}{\cot x}$$

$$\frac{\frac{1}{\sin^2 x}}{\frac{\cos x}{\sin x}}$$

$$\frac{1}{\sin x} \cdot \frac{\sin x}{\cos x}$$

$$\frac{1}{\sin x} \quad \frac{1}{\cos x}$$

$$\csc x \quad \sec x$$

$$5) \cos^2 x - \sin^2 x = 1 - 2\sin^2 x$$


$$(1 - \sin^2 x) - \sin^2 x$$

$$1 - 2\sin^2 x$$

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

$$\frac{(1 + \sin x) + (1 - \sin x)}{(1 - \sin x)(1 + \sin x)}$$

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

$$= 2 \cdot \frac{1}{\cos^2 x}$$


$$\tan x + \cot x = \sec x \csc x$$

$$\frac{\sin x}{\cos x} + \frac{\cos x}{\sin x}$$

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

$$\frac{1}{\cos x \sin x} = \sec x \csc x$$

$$\frac{5}{3} + \frac{3}{5} = \frac{5(5) + 3(3)}{15}$$

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

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

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

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

$$\sec x + \tan x$$

$\sec x + \tan x$

$$\frac{1}{\cos x} + \frac{\sin x}{\cos x}$$

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

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

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#21, 22, 27, 29

Hint #21

$$y = \sin^{1/2} x$$