ex 4

$$\frac{\cot x}{\cos x} = 2.$$

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

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

$$\frac{1}{\sin x} = 2 \rightarrow \sin x \frac{1}{\sin x} = 2 \sin x$$

$$1 = 2 \sin x$$

$$\csc x = 2$$

$$\frac{1}{2} = \sin x$$

30. $\dfrac{1+\tan x}{1+\cot x} = 2$ $\longrightarrow$ $\dfrac{1+\tan x}{1+\cot x} = 2$

$1+\tan x = 2(1+\cot x)$

$1+\dfrac{\sin x}{\cos x} = 2\left(1+\dfrac{\cos x}{\sin x}\right)$

$\dfrac{\cos x}{\cos x}\,1+\dfrac{\sin x}{\cos x} = \dfrac{2\sin x}{\sin x}+\dfrac{2\cos x}{\sin x}$

$\dfrac{\cos x+\sin x}{\cos x} = \dfrac{2\sin x+2\cos x}{\sin x}$

$\sin x(\cos x+\sin x) = \cos x(2\sin x+2\cos x)$

$\dfrac{\sin x\,\cancel{(\cos x+\sin x)}}{\cancel{\cos x+\sin x}} = \dfrac{2\cos x\,\cancel{(\sin x+\cos x)}}{\cancel{\cos x+\sin x}}$

$\sin x = 2\cos x$ $\longrightarrow$ $1 = 2\dfrac{\cos x}{\sin x}$

$\dfrac{\sin x}{\cos x} = 2$ $\qquad$ $\dfrac{1}{2} = \cot x$

$\tan = 2$

$\dfrac{\frac{\cos x}{\cos x}\,1+\frac{\sin x}{\cos x}}{\frac{\sin x}{\sin x}\,1+\frac{\cos x}{\sin x}} = 2$

$\dfrac{\frac{\cos x+\sin x}{\cos x}}{\frac{\sin x+\cos x}{\sin x}} = 2$

$\dfrac{\cancel{\cos x+\sin x}}{\cos x}\cdot\dfrac{\sin x}{\cancel{\sin x+\cos x}} = 2$

$\dfrac{\sin x}{\cos x} = 2$

$\tan x = 2$

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