

$$54) \operatorname{tg}\left(\frac{\pi}{4}+x\right) + \operatorname{tg}\left(\frac{\pi}{4}-x\right) = 2 \sec 2x$$

$$\rightarrow \operatorname{tg}\left(\frac{\pi}{4}+x\right) + \operatorname{tg}\left(\frac{\pi}{4}-x\right) =$$

$$\left. \operatorname{tg} \frac{\pi}{4} = 1 \right\} = \frac{\operatorname{tg} \frac{\pi}{4} + \operatorname{tg} x}{1 - \operatorname{tg} \frac{\pi}{4} \operatorname{tg} x} + \frac{\operatorname{tg} \frac{\pi}{4} - \operatorname{tg} x}{1 + \operatorname{tg} \frac{\pi}{4} \operatorname{tg} x}$$

$$= \frac{1 + \operatorname{tg} x}{1 - \operatorname{tg} x} + \frac{1 - \operatorname{tg} x}{1 + \operatorname{tg} x}$$

$$\left. \begin{array}{l} 1 + \operatorname{tg}^2 x = \sec^2 x \\ \operatorname{tg}^2 x = \sec^2 x - 1 \end{array} \right\} \equiv \frac{(1 + \operatorname{tg} x)^2 + (1 - \operatorname{tg} x)^2}{(1 - \operatorname{tg} x)(1 + \operatorname{tg} x)}$$

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

$$= \frac{2 + 2\operatorname{tg}^2 x}{1 - \operatorname{tg}^2 x} = \frac{2(1 + \operatorname{tg}^2 x)}{1 - \operatorname{tg}^2 x}$$

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

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