

$$29) 2 \operatorname{ctg} 2x = \operatorname{ctg} x - \operatorname{tg} x$$

$$\rightarrow // 2 \operatorname{ctg} 2x = 2 \operatorname{ctg} (x+x)$$

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

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

$$= \underline{\underline{\operatorname{ctg} x - \operatorname{tg} x}}$$

$$30) \frac{\cos 2x}{1 + \sin 2x} = \operatorname{tg} \left(\frac{\pi}{4} - x \right)$$

$$\rightarrow // \operatorname{tg} \left(\frac{\pi}{4} - x \right) = \frac{\operatorname{tg} \frac{\pi}{4} - \operatorname{tg} x}{1 + \operatorname{tg} \frac{\pi}{4} \cdot \operatorname{tg} x} = \frac{1 - \operatorname{tg} x}{1 + \operatorname{tg} x}$$

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

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

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