

$$27) \frac{1 + \cos x}{\sin x} = \operatorname{ctg} \frac{x}{2}$$

$$\left\{ \begin{aligned} 1 + \cos x &= 1 + \cos 2 \cdot \frac{x}{2} = 1 + (2\cos^2 \frac{x}{2} - 1) \\ &= 2\cos^2 \frac{x}{2} // \\ \sin x &= \sin 2 \cdot \frac{x}{2} = 2 \sin \frac{x}{2} \cos \frac{x}{2} // \end{aligned} \right.$$

$$\therefore \frac{1 + \cos x}{\sin x} = \frac{2\cos^2 \frac{x}{2}}{2\sin \frac{x}{2} \cos \frac{x}{2}} = \frac{\cos \frac{x}{2}}{\sin \frac{x}{2}} = \operatorname{ctg} \frac{x}{2}$$

$$28) 2 \operatorname{csc} 2x = \sec x \operatorname{csc} x$$

$$\rightarrow // 2 \operatorname{csc} 2x = 2 \frac{1}{\sin 2x}$$

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

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

$$= \operatorname{csc} x \cdot \sec x //$$