

$$5. \sec^2 x - \sec^2 y = \operatorname{tg}^2 x - \operatorname{tg}^2 y$$

$$\begin{aligned} \rightarrow \underline{\sec^2 x} - \underline{\sec^2 y} &= \underline{1 + \operatorname{tg}^2 x} - (1 + \operatorname{tg}^2 y) \\ &= 1 + \operatorname{tg}^2 x - 1 - \operatorname{tg}^2 y \\ &= \operatorname{tg}^2 x - \operatorname{tg}^2 y // \end{aligned}$$

$$6. \frac{\operatorname{tg} x + \operatorname{tg} y}{\operatorname{ctg} x + \operatorname{ctg} y} = \operatorname{tg} x \cdot \operatorname{tg} y$$

$$\begin{aligned} \rightarrow \frac{\operatorname{tg} x + \operatorname{tg} y}{\operatorname{ctg} x + \operatorname{ctg} y} &= \frac{\frac{\sin x}{\cos x} + \frac{\sin y}{\cos y}}{\frac{\cos x}{\sin x} + \frac{\cos y}{\sin y}} \\ &= \frac{\frac{\sin x \cos y + \sin y \cos x}{\cos x \cos y}}{\frac{\cos x \sin y + \cos y \sin x}{\sin x \sin y}} \\ &= \frac{\sin x \cos y + \sin y \cos x}{\cos x \cos y} \cdot \frac{\sin x \sin y}{\cos x \sin y + \cos y \sin x} \\ &= \frac{\sin x \sin y}{\cos x \cos y} = \frac{\sin x}{\cos x} \cdot \frac{\sin y}{\cos y} \\ &= \operatorname{tg} x \cdot \operatorname{tg} y // \end{aligned}$$