

$$7. \cos\left(\frac{\alpha}{2} + \frac{\beta}{2}\right) = -\sin X$$

$$\begin{aligned} & \cos \frac{\alpha}{2} \cos \frac{\beta}{2} - \sin \frac{\alpha}{2} \sin \frac{\beta}{2} \\ & \cos \frac{\pi}{2} \cos X - \sin \frac{\pi}{2} \sin X \\ & 0 (\cos X) - 1 \cdot \sin X \\ & -\sin X \checkmark \end{aligned}$$

$$8. \frac{\csc \alpha \csc \beta}{\cot \beta + \cot \alpha} = \csc(\alpha + \beta)$$

$$\frac{1}{\sin(\alpha + \beta)}$$

$$\frac{1}{\sin \alpha \cos \beta + \cos \alpha \sin \beta}$$

$$\frac{1}{\sin \beta \sin \alpha}$$

$$\frac{\cancel{\sin \alpha} \cos \beta}{\cancel{\sin \alpha} \sin \beta} + \frac{\cos \alpha \cancel{\sin \beta}}{\sin \alpha \cancel{\sin \beta}}$$

$$\frac{\csc \beta \csc \alpha}{\cot \beta + \cot \alpha} \checkmark$$