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PRINTABLE NOTEPAD 1

8.

$$\tan^2 x = \frac{1 - \cos 2x}{1 + \cos 2x} \Rightarrow$$

$$\begin{aligned}\cos 2x &= \cos^2 x - \sin^2 x \\ &= 1 - 2\sin^2 x \\ &= \underline{2\cos^2 x - 1}\end{aligned}$$

$$= \frac{1 - (1 - 2\sin^2 x)}{1 + (2\cos^2 x - 1)}$$

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

$$= \frac{2\sin^2 x}{2\cos^2 x}$$

$$= \frac{\sin^2 x}{\cos^2 x}$$

$$= \tan^2 x \quad \square$$

8.

$$\tan^2 x = \frac{1 - (\cos 2x)}{1 + (\cos 2x)} \Rightarrow$$

$$\cos 2x = \cos^2 x - \sin^2 x$$

$$= 1 - 2\sin^2 x$$

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

$$= \frac{1 - (1 - 2\sin^2 x)}{1 + (2\cos^2 x - 1)}$$

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

$$= \frac{2\sin^2 x}{2\cos^2 x}$$

$$= \frac{\sin^2 x}{\cos^2 x}$$

$$= \tan^2 x \quad \square$$