

$$23) \frac{\csc(\pi-x)}{\sec(\pi+x)} \cdot \frac{\cos(-x)}{\cos(\frac{\pi}{2}+x)} = \text{ctg}^2 x$$

$$\left\{ \begin{aligned} \csc(\pi-x) &= \frac{1}{\sin(\pi-x)} = \frac{1}{\sin x} \end{aligned} \right.$$

$$\cos(-x) = \cos x$$

$$\left\{ \begin{aligned} \sec(\pi+x) &= \frac{1}{\cos(\pi+x)} = -\frac{1}{\cos x} \end{aligned} \right.$$

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

$$\frac{\csc(\pi-x)}{\sec(\pi+x)} \cdot \frac{\cos(-x)}{\cos(\frac{\pi}{2}+x)} = \frac{\frac{1}{\sin x}}{-\frac{1}{\cos x}} \cdot \frac{\cos x}{-\sin x}$$

$$= \frac{\cos x}{\sin x} \cdot \frac{\cos x}{\sin x} = \frac{\cos^2 x}{\sin^2 x} = \underline{\underline{\text{ctg}^2 x}}$$

$$24) \frac{\cos(\frac{\pi}{2}+x) \sec(-x) \text{tg}(\pi-x)}{\sec(2\pi+x) \sin(\pi+x) \text{ctg}(\frac{\pi}{2}-x)} = -1$$

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

$$\left\{ \begin{aligned} \sec(-x) &= \frac{1}{\cos(-x)} = \frac{1}{\cos x} \end{aligned} \right.$$

$$\left\{ \begin{aligned} \text{tg}(\pi-x) &= -\text{tg} x \end{aligned} \right.$$