

$$13. \cos\left(\frac{3\pi}{4} + x\right) + \sin\left(\frac{3\pi}{4} - x\right) = 0$$

$$\rightarrow \cos\left(\frac{3\pi}{4} + x\right) + \sin\left(\frac{3\pi}{4} - x\right) =$$

$$(*) = \underbrace{\cos\frac{3\pi}{4}} \cos x - \underbrace{\sin\frac{3\pi}{4}} \sin x +$$

$$+ \underbrace{\sin\frac{3\pi}{4}} \cos x - \sin x \underbrace{\cos\frac{3\pi}{4}}$$

$$\frac{3\pi}{4} = 135$$

$$\frac{180 - 45}{4} = 135$$

$$\frac{\pi - \pi}{4} = \frac{3\pi}{4}$$

But:

$$\left\{ \begin{aligned} \cos\frac{3\pi}{4} &= \cos\left(\pi - \frac{\pi}{4}\right) = -\cos\frac{\pi}{4} = -\frac{\sqrt{2}}{2} \\ \sin\frac{3\pi}{4} &= \sin\left(\pi - \frac{\pi}{4}\right) = \sin\frac{\pi}{4} = \frac{\sqrt{2}}{2} \end{aligned} \right.$$

Then

$$(*) = \underbrace{-\frac{\sqrt{2}}{2}} \cos x - \underbrace{\frac{\sqrt{2}}{2}} \sin x +$$

$$+ \underbrace{\frac{\sqrt{2}}{2}} \cos x - \sin x \underbrace{\left(-\frac{\sqrt{2}}{2}\right)}$$

$$= 0 //$$