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$$\cos\left(t - \frac{\pi}{4}\right) = \cos t \cos \frac{\pi}{4} + \sin t \sin \frac{\pi}{4} = \cos t \left(\frac{\sqrt{2}}{2}\right) + \sin t \left(\frac{\sqrt{2}}{2}\right) = \frac{\sqrt{2}}{2} (\cos t + \sin t)$$