

$$\begin{aligned}
\cos \frac{\pi}{8} * \cos \frac{7\pi}{8} * \cos \frac{3\pi}{8} * \cos \frac{5\pi}{8} &= \cos \frac{\pi}{8} * \cos \left(\pi - \frac{\pi}{8} \right) * \cos \frac{3\pi}{8} * \cos \left(\pi - \frac{3\pi}{8} \right) \\
&= \cos \frac{\pi}{8} * \left(-\cos \frac{\pi}{8} \right) * \cos \frac{3\pi}{8} * \left(-\cos \frac{3\pi}{8} \right) = \cos^2 \frac{\pi}{8} * \cos^2 \frac{3\pi}{8} \\
&= \left(\cos \frac{\pi}{8} * \cos \frac{3\pi}{8} \right)^2 = \left(\frac{1}{2} \left[\cos \left(\frac{\pi}{8} + \frac{3\pi}{8} \right) + \cos \left(\frac{3\pi}{8} - \frac{\pi}{8} \right) \right] \right)^2 \\
&= \frac{1}{4} \left(\cos \left(\frac{\pi}{2} \right) + \cos \left(\frac{\pi}{4} \right) \right)^2 = \frac{1}{4} * \frac{1}{2} = \frac{1}{8}
\end{aligned}$$