Related Questions with Solutions

Questions

Quetion: 01

Find the value of $\cos^2 \dfrac{\pi}{16} + \cos^2 \dfrac{3\pi}{16} + \cos^2 \dfrac{5\pi}{16} + \cos^2 \dfrac{7\pi}{16}$

A. 0

B. 1

C. 2

D. 4

Solutions

Solution: 01

$$\cos \dfrac{7\pi}{16} = \sin \left(\dfrac{\pi}{2} - \dfrac{7\pi}{16} \right) = \sin \dfrac{\pi}{16}$$

$$\cos \dfrac{5\pi}{16} = \sin \left(\dfrac{\pi}{2} - \dfrac{5\pi}{16} \right) = \sin \dfrac{3\pi}{16}$$

Hence given expression becomes

$$\cos^2 \dfrac{\pi}{16} + \cos^2 \dfrac{3\pi}{16} + \sin^2 \dfrac{3\pi}{16} + \sin^2 \dfrac{\pi}{16}$$

$$= \left(\cos^2 \dfrac{\pi}{16} + \sin^2 \dfrac{\pi}{16} \right) + \left(\cos^2 \dfrac{3\pi}{16} + \sin^2 \dfrac{3\pi}{16} \right)$$

$$= 1 + 1$$

$$= 2$$

Correct Options

Answer:01

Correct Options: C