

تمرين 1 : بسط ما يلي :

$$A = \cos^2\left(\frac{\pi}{8}\right) + \cos^2\left(\frac{3\pi}{8}\right) + \cos^2\left(\frac{5\pi}{8}\right) + \cos^2\left(\frac{7\pi}{8}\right)$$

$$B = \sin^2\left(\frac{\pi}{12}\right) + \sin^2\left(\frac{5\pi}{12}\right) + \sin^2\left(\frac{7\pi}{12}\right) + \sin^2\left(\frac{13\pi}{12}\right)$$

$$C = \cos^2\left(\frac{\pi}{12}\right) + \cos^2\left(\frac{11\pi}{12}\right) + 2\cos^2\left(\frac{5\pi}{12}\right)$$

$$D = \cos\left(\frac{\pi}{12}\right) \cdot \sin\left(\frac{7\pi}{12}\right) + \sin\left(\frac{\pi}{12}\right) \cdot \cos\left(\frac{5\pi}{12}\right)$$

$$E = \sin^2\left(\frac{\pi}{12}\right) + \sin^2\left(\frac{3\pi}{12}\right) + \sin^2\left(\frac{5\pi}{12}\right) + \sin^2\left(\frac{7\pi}{12}\right) + \sin^2\left(\frac{9\pi}{12}\right) + \sin^2\left(\frac{11\pi}{12}\right)$$

تمرين 2 : احسب ما يلي ، $\cos\left(\frac{26\pi}{3}\right)$ ، $\tan\left(\frac{85\pi}{4}\right)$ ، $\sin\left(\frac{2015\pi}{6}\right)$

تمرين 3 : علما ان ، $\cos\left(\frac{2\pi}{5}\right) = \frac{\sqrt{5}-1}{4}$

(1) احسب القيمة للضبوطة لـ $\sin\left(\frac{2\pi}{5}\right)$

(2) استنتج القيم للضبوطة لـ $\sin\left(\frac{-2\pi}{5}\right)$ و $\sin\left(\frac{3\pi}{5}\right)$ و $\cos\left(\frac{\pi}{10}\right)$

تمرين 4 : لكل عدد حقيقي x نضع ، $A(x) = \sin\left(x + \frac{\pi}{4}\right) + \cos\left(x + \frac{\pi}{4}\right)$

▪ بين ان : $A(-x) = A(x)$

▪ بين ان : $A(\pi - x) = -A(x)$

تمرين 5 : x عدد حقيقي ، بين ان :

$$(1) \sin^4 x - \cos^4 x = \sin^2 x - \cos^2 x$$

$$(2) \sin^4 x + \cos^4 x = 1 - 2\sin^2 x \cos^2 x$$

$$(3) \sin^6 x + \cos^6 x = 1 - 3\sin^2 x \cos^2 x$$

$$(4) \sin^2\left(\frac{2\pi}{5}\right) - \cos^2\left(\frac{2\pi}{5}\right) = \cos^2\left(\frac{\pi}{10}\right) - \sin^2\left(\frac{\pi}{10}\right)$$