

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: أحسب ما يلي :

$$\cos\left(\frac{2\pi}{5}\right) = \frac{\sqrt{5}-1}{4}$$

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

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

تمرين 4: لشكل عدد حقيقي x نضع :

$$A(-x) = A(x)$$

$$A(\pi - x) = -A(x)$$

تمرين 5: x عدد حقيقي ، بين أن :

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

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

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

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