

$$\text{لأنه) } \tan \frac{11\pi}{4} + \sin \frac{10\pi}{4} \cdot \cos \frac{1\pi}{4} = -1 + \frac{\sqrt{2}}{2} \cdot \frac{\sqrt{2}}{2} = -1 + \frac{1}{2} = -\frac{1}{2} \quad (B \text{ صيغة جيب التمام}) - 1$$

$$\rightarrow \tan \frac{11\pi}{4} \sin \frac{11\pi}{4} + \cos \frac{11\pi}{4} = -\frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2} = -\frac{1}{2} \cdot \frac{\sqrt{2}}{2} - \frac{1}{2} = 0$$

$$c.tan^2 \Rightarrow \frac{\cos^2}{\sin^2} = \frac{1}{\tan^2} \Rightarrow \cot^2 \Rightarrow \sin^2 = \frac{1}{1+\cot^2} = \frac{1}{1+\frac{1}{\sin^2}} = \frac{\sin^2}{1+\sin^2} \quad - 2$$

$$\sin 2 = \cos 2$$

$$\sin 2 \cos 2$$

$$\tan 2 = \frac{\cos 2}{\sin 2} = \frac{1}{\tan 2}$$

- 2

$$\tan^2 + 1 = \frac{1}{\cos^2} \Rightarrow \tan^2 = \frac{1}{\cos^2} - 1 = \frac{1 - \cos^2}{\cos^2} = \frac{\sin^2}{\cos^2} = \tan^2$$

$$\text{لأن) } \cos(\frac{11\pi}{4} + \alpha) = \cos(\frac{7\pi}{4} + \alpha)$$

- 2

$$\sin^2 + \cos^2 = 1 \Rightarrow \frac{1}{4} + \cos^2 = 1$$

$$\cos^2 = \frac{3}{4} \Rightarrow \cos = \frac{\sqrt{3}}{2}$$

$$\sin \frac{5\pi}{6} = \frac{\sqrt{2}}{2}, \cos \frac{5\pi}{6} = -\frac{\sqrt{3}}{2}$$

$$\cos(\alpha + \beta) = (\cos \alpha \cdot \cos \beta) - (\sin \alpha \cdot \sin \beta)$$

$$= (\frac{\sqrt{3}}{2} \cdot \frac{\sqrt{2}}{2}) - (\frac{1}{2} \cdot \frac{\sqrt{3}}{2}) = \frac{\sqrt{6}}{4} - \frac{\sqrt{3}}{4} = \frac{\sqrt{6} - \sqrt{3}}{4}$$

$$\rightarrow \sin(\frac{7\pi}{4} + \alpha) = \sin(\frac{5\pi}{4} + \alpha)$$

$$\tan \alpha = \frac{1}{\cos \alpha} \Rightarrow 1 + \frac{1}{\cos^2} = \frac{1}{\cos^2}$$

$$\Rightarrow \cos^2 \alpha = \frac{1}{2} \Rightarrow \cos \alpha = \frac{1}{\sqrt{2}}$$

$$\sin(\alpha + \beta) = \sin \alpha \cos \beta + \sin \beta \cos \alpha$$

$$\sin \frac{5\pi}{6} = \frac{\sqrt{2}}{2} \Rightarrow \cos \frac{5\pi}{6} = -\frac{\sqrt{3}}{2}$$

$$= (\frac{1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{2}) + (-\frac{\sqrt{3}}{2} \cdot \frac{1}{\sqrt{2}}) = \frac{1}{2} - \frac{\sqrt{3}}{2\sqrt{2}} = \frac{1 - \frac{\sqrt{3}}{\sqrt{2}}}{2}$$

(2)

$$\sin^2 u + \cos^2 u = 1, \sin^2 u = \frac{1}{4} \Rightarrow \sin u = \frac{1}{2}, \cos u = \frac{\sqrt{3}}{2}$$

$$\tan^2 u + 1 = \frac{1}{\cos^2 u} \Rightarrow \tan^2 u = \frac{1}{\cos^2 u} - 1 = \frac{1 - \cos^2 u}{\cos^2 u} = \frac{\sin^2 u}{\cos^2 u} = \tan^2 u$$

$$\frac{1}{2} \times \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} \sin 2 = \frac{1}{2} \times \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} \sin 2 = \frac{1}{4} \sin 2$$

(3)

$$\frac{1}{\sqrt{2}} \cdot \frac{1}{2} \cdot \frac{\sqrt{2}}{2} = \frac{1}{4} \sin 2 = \frac{1}{4} \cdot \frac{\sqrt{2}}{2} = \frac{\sqrt{2}}{8}$$

