

$$\tan \theta = \frac{1}{\cos \theta} \Rightarrow \cos \theta = \frac{1}{\tan \theta} \rightarrow \cos \theta = \frac{1}{\frac{1}{\sqrt{3}}} \rightarrow \cos \theta = \sqrt{3} \rightarrow \theta = \frac{\pi}{3}, \frac{2\pi}{3} \rightarrow \boxed{\text{جواب ۱}}$$

$$\cos \theta = \frac{1}{\sqrt{3}} \Rightarrow \cos \theta = \frac{1}{\sqrt{3}} \rightarrow \cos \theta = \frac{1}{\sqrt{3}} \rightarrow \theta = \frac{\pi}{3}, \frac{2\pi}{3} \rightarrow \boxed{\text{جواب ۲}}$$

$$\cos \theta = \frac{1}{\sqrt{3}} \Rightarrow \cos \theta = \frac{1}{\sqrt{3}} \rightarrow \cos \theta = \frac{1}{\sqrt{3}} \rightarrow \theta = \frac{\pi}{3}, \frac{2\pi}{3} \rightarrow \boxed{\text{جواب ۳}}$$

$$\cos \theta = \frac{1}{\sqrt{3}} \Rightarrow \cos \theta = \frac{1}{\sqrt{3}} \rightarrow \cos \theta = \frac{1}{\sqrt{3}} \rightarrow \theta = \frac{\pi}{3}, \frac{2\pi}{3} \rightarrow \boxed{\text{جواب ۴}}$$

$$\sin \theta = \frac{1}{\sqrt{3}} \Rightarrow \sin \theta = \frac{1}{\sqrt{3}} \rightarrow \sin \theta = \frac{1}{\sqrt{3}} \rightarrow \theta = \frac{\pi}{6}, \frac{5\pi}{6} \rightarrow \boxed{\text{جواب ۵}}$$

$$\sin \theta = \frac{1}{\sqrt{3}} \Rightarrow \sin \theta = \frac{1}{\sqrt{3}} \rightarrow \sin \theta = \frac{1}{\sqrt{3}} \rightarrow \theta = \frac{\pi}{6}, \frac{5\pi}{6} \rightarrow \boxed{\text{جواب ۶}}$$

$$\sin \theta = \frac{1}{\sqrt{3}} \Rightarrow \sin \theta = \frac{1}{\sqrt{3}} \rightarrow \sin \theta = \frac{1}{\sqrt{3}} \rightarrow \theta = \frac{\pi}{6}, \frac{5\pi}{6} \rightarrow \boxed{\text{جواب ۷}}$$

$$\sin \theta = \frac{1}{\sqrt{3}} \Rightarrow \sin \theta = \frac{1}{\sqrt{3}} \rightarrow \sin \theta = \frac{1}{\sqrt{3}} \rightarrow \theta = \frac{\pi}{6}, \frac{5\pi}{6} \rightarrow \boxed{\text{جواب ۸}}$$

$$\sin \theta = \frac{1}{\sqrt{3}} \Rightarrow \sin \theta = \frac{1}{\sqrt{3}} \rightarrow \sin \theta = \frac{1}{\sqrt{3}} \rightarrow \theta = \frac{\pi}{6}, \frac{5\pi}{6} \rightarrow \boxed{\text{جواب ۹}}$$

$$\sin \theta = \frac{1}{\sqrt{3}} \Rightarrow \sin \theta = \frac{1}{\sqrt{3}} \rightarrow \sin \theta = \frac{1}{\sqrt{3}} \rightarrow \theta = \frac{\pi}{6}, \frac{5\pi}{6} \rightarrow \boxed{\text{جواب ۱۰}}$$

$$\frac{1}{\sqrt{r}} (\cos n - \sin n) = \frac{1}{\sqrt{2}} \rightarrow \frac{\sqrt{2}}{r} m - \sqrt{2} \sin n = \sqrt{2} \rightarrow \frac{m}{r} - 1 = 1 \rightarrow \textcircled{5}$$

$$\frac{r}{2} = 1 - \sin n \quad \leftarrow \text{منه}$$

$$\sin n = \frac{1}{2} \quad *$$

$$\cos(n - \frac{\pi}{2}) = \cos(\frac{\pi}{2} - n) = \sin(\frac{\pi}{2} - \frac{\pi}{2} + n) = \sin(n) \rightarrow \sin(n + \frac{\pi}{2}) = 1 \quad \textcircled{6}$$

$$\rightarrow \sin(n + \frac{\pi}{2}) = \pm 1 \quad \left\{ \begin{array}{l} n + \frac{\pi}{2} = \frac{\pi}{2} + k\pi \rightarrow n = k\pi \rightarrow n = \frac{\pi}{2} \\ n + \frac{\pi}{2} = \frac{3\pi}{2} + k\pi \rightarrow n = k\pi + \pi \rightarrow n = \frac{3\pi}{2} \end{array} \right. \rightarrow \boxed{\text{جواب}}$$

$$r(\frac{1}{r} \sin n + \frac{\sqrt{2}}{r} \cos n) = \sqrt{2} \rightarrow \frac{1}{r} = \sin(n + \frac{\pi}{2}) = \sin(\frac{\pi}{2}) \rightarrow n + \frac{\pi}{2} = k\pi + \frac{\pi}{2} \quad \textcircled{7}$$

$$\left\{ \begin{array}{l} n = k\pi - \frac{\pi}{15} \\ n = k\pi + \frac{\pi}{15} \end{array} \right\} \rightarrow n = \frac{\pi}{15}, \frac{2\pi}{15}, \frac{4\pi}{15}, \dots \rightarrow \text{جواب} = \frac{\pi}{15} + k\pi \quad \boxed{\frac{\pi}{15}}$$

$$\sin n \times (-\cos n) = 1 \rightarrow \sin n = \frac{1}{r} = \sin \frac{\pi}{6} \rightarrow n = k\pi + \frac{\pi}{6} \rightarrow n = k\pi + \frac{\pi}{6} \quad \textcircled{8}$$

$$\rightarrow n = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6} \rightarrow \text{جواب} = \frac{\pi}{6} + k\pi \quad \boxed{\frac{\pi}{6}}$$

$$1 + \cos 2\alpha + 2\cos^2 \alpha, 1 + \cos 2\alpha + 2\cos^2 \alpha, 1 + \cos 2\alpha + 2\cos^2 \alpha \rightarrow \quad (9)$$

$$\cos^2 \alpha \times \cos^2 \alpha \times \cos^2 \alpha \times \frac{1}{\sqrt{2}} \rightarrow \frac{1}{\sqrt{2}} \times \sin^2 \alpha \times \frac{1}{\sqrt{2}} \times \sin^2 \alpha \times \sin^2 \alpha \rightarrow \sin^2 \alpha \times \sin^2 \alpha \times \sin^2 \alpha$$

$$\begin{aligned} \rightarrow \sin \alpha \times \sin \alpha & \rightarrow \alpha = \frac{2k\pi}{9} \\ & \rightarrow \alpha = \frac{2k\pi}{9} + \frac{\pi}{9} \\ & \rightarrow \alpha = \frac{2k\pi}{9} \\ & \rightarrow \sqrt{\alpha = \frac{2k\pi}{9} + \pi} \end{aligned} \quad \left. \begin{array}{l} \text{Max } A \rightarrow \frac{2k\pi}{9} \\ \rightarrow \boxed{\frac{12\pi}{9}} \end{array} \right\}$$

در مجموع جواب عدد π نیز به چشم می خورد اما غیر قابل قبول است چرا که مادر ابعاد طیفین را در $\sin^2 \alpha$

فهرت کردیم و اگر $m = \pi$ باشد مثل این است طیفین یک محاسبه را در $\frac{1}{2}$ کنیم و معجب سوای بود!

$$\tan 2\alpha = \cot \alpha \rightarrow \tan\left(\frac{\pi}{2} - \alpha\right) \rightarrow \frac{\pi}{2} - k\pi + \frac{\pi}{2} - \alpha \rightarrow \alpha = \frac{k\pi}{2} + \frac{\pi}{4} \quad (10)$$

$$\rightarrow \alpha = \frac{\pi}{4} + \frac{\pi}{4}, \frac{3\pi}{4} + \frac{\pi}{4}, \frac{5\pi}{4} + \frac{\pi}{4}, \frac{7\pi}{4} + \frac{\pi}{4} \rightarrow \text{ع.ج.} = \frac{12\pi}{4} + \frac{\pi}{4} = \frac{31\pi}{4} \rightarrow \boxed{4\pi}$$