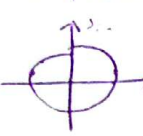
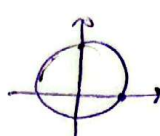
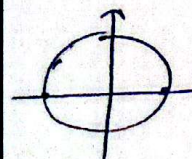
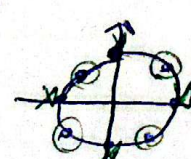


نام و نام خانوادگی: سرنام: پاسخنامه تشریحی تکلیف شماره 14 کلاس دوازدهم ریاضی B

الف) $\cos \alpha = \frac{r}{r} \sin \alpha = 1 \rightarrow 1 - r^2 \sin^2 \alpha = r^2 \sin^2 \alpha - 1$ $r^2 \sin^2 \alpha + r^2 \sin^2 \alpha - r^2 = 0 \rightarrow 2r^2 \sin^2 \alpha - r^2 = 0$ $\sin^2 \alpha = \frac{1}{2} \rightarrow \sin \alpha = \frac{1}{\sqrt{2}}$  $\left\{ \frac{\pi}{4} + 2k\pi, \frac{3\pi}{4} + 2k\pi \right\}$	ب) $\cos \alpha + \sin \alpha = 1 \rightarrow r^2 \cos^2 \alpha + r^2 \sin^2 \alpha - r^2 = 0$ $\cos^2 \alpha + \sin^2 \alpha = 1$  $\left\{ 2k\pi, \frac{\pi}{2} + 2k\pi \right\}$	1
$-(\cos \alpha + \sin \alpha)(\cos \alpha - \sin \alpha) = \sin^2 \alpha$ $\sin^2 \alpha = -\cos^2 \alpha \rightarrow \sin^2 \alpha = \sin^2 \left(\frac{\pi}{2} - \alpha \right)$ $\alpha = \frac{\pi}{2} - \alpha + 2k\pi \rightarrow \alpha = \frac{\pi}{4} + k\pi$ $\alpha = \frac{\pi}{4} + k\pi$	$r^2 \cos^2 \alpha + r^2 \sin^2 \alpha = 1 \rightarrow 1 - \cos^2 \alpha + \sin^2 \alpha = 1$ $\sin^2 \alpha = \cos^2 \alpha \rightarrow \alpha = k\pi + \frac{\pi}{4}$ $\alpha = \frac{k\pi}{2} + \frac{\pi}{4}$	2
الف) $\cos m = \frac{1}{\sin m}$ $\cos m = \frac{1}{\sin m} \rightarrow \cos^2 m + \sin^2 m = 1$ $m = \frac{\pi}{4} + k\pi$		3
$\cos \left(\frac{\pi}{2} + m \right) \sin \left(\frac{\pi}{2} + m \right) = \frac{1}{r^2}$ $\sin \left(\frac{\pi}{2} + m \right) = \cos m$ $\sin^2 \left(\frac{\pi}{2} + m \right) = \frac{1}{r^2}$ $\sin^2 \left(\frac{\pi}{2} + m \right) = \cos^2 m$ $m = \frac{\pi}{4} + k\pi$	$\cos \left(\frac{\pi}{2} - m \right) = \sin \left(\frac{\pi}{2} + m \right)$ $\cos m = \sin m$ $m = \frac{\pi}{4} + k\pi$	4
$\frac{\sin^2 \alpha + \sin^2 \alpha}{\sin^2 \alpha} = \cos^2 \alpha \rightarrow \frac{\sin^2 \alpha}{\sin^2 \alpha} + 1 = 1 \rightarrow \frac{\sin^2 \alpha}{\sin^2 \alpha} = 0$ $\alpha = \frac{\pi}{4} + k\pi$ 	$\frac{\sin^2 \alpha}{\sin^2 \alpha} + 1 = 1 \rightarrow \frac{\sin^2 \alpha}{\sin^2 \alpha} = 0$ $\alpha = \frac{\pi}{4} + k\pi$ 	5

$$\frac{\sin \frac{m}{r}}{1 + \cos \frac{m}{r}} = \frac{1}{\sin \frac{m}{r}} + \cot \frac{m}{r} \rightarrow \frac{\sin \frac{m}{r}}{1 + \cos \frac{m}{r}} = \frac{1 + \cos \frac{m}{r}}{\sin \frac{m}{r}} \Rightarrow \tan \frac{m}{r} = \cot \frac{m}{r}$$

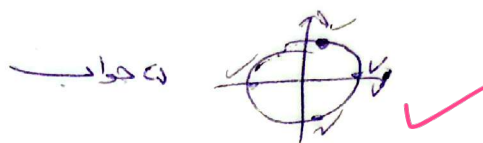
$$\Rightarrow \tan \frac{m}{r} = 1 \rightarrow \tan \frac{m}{r} = \pm 1 \quad \frac{m}{r} = kn \pm \frac{\pi}{r} \quad \begin{cases} m = rkn + n \rightarrow \pi \\ m = rkn - n \rightarrow -\pi \end{cases}$$

$$|n - r| = r$$

6

$$\cos^2 \alpha - \sin^2 \alpha = 1 \rightarrow \cos^2 \alpha - \sin^2 \alpha = \cos^2 \alpha + \sin^2 \alpha$$

$$\cos^2 \alpha = -1 \rightarrow r = rkn + k \rightarrow m = \frac{r}{r} k r + \frac{k}{r}$$



در صورتی که در نقطه‌ی دیگر
 $\sin \frac{m}{r} = 1$
 $m = kn$

7

$$\frac{1 - \tan \alpha}{1 + \tan \alpha} = \tan \alpha \rightarrow \tan \left(\frac{\pi}{4} - \alpha \right) = \tan \alpha \rightarrow r = kn + \frac{\pi}{4} - \alpha$$

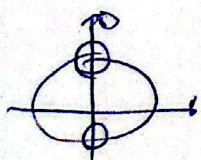
$$\rightarrow r = kn + \frac{\pi}{4} \rightarrow m = \frac{kn}{r} + \frac{\pi}{4}$$

$$\begin{cases} \cos \alpha \neq 0 \rightarrow m \neq rkn \pm \frac{\pi}{r} \\ \sin \alpha \neq 0 \rightarrow m \neq rkn \pm \frac{\pi}{r} \\ \tan \alpha \neq -1 \rightarrow m \neq kn + \frac{\pi}{r} \end{cases} \rightarrow m \neq \frac{kn}{r} \pm \frac{\pi}{r}$$

8

9

الف) $\sin^2 \alpha - \cos^2 \alpha = 1$ به ساده‌سازی می‌کنیم

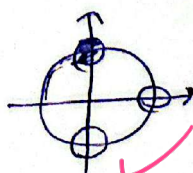


$\frac{\pi}{2}$ و $\frac{3\pi}{2}$

$$\left\{ kn + \frac{\pi}{r} \right\}$$

۲ جواب

$$\sin^2 \alpha - \cos^2 \alpha = -1$$



0 و π و $\frac{\pi}{r}$

$$\left\{ rkn, rkn - \frac{\pi}{r} \right\}$$

۳ جواب

۱۰

۱۰

$$P(1 - \cos^2 n) = \sin n \cos n + \cos^2 n = P$$

$$-\cos^2 n - \sin n \cos n = 0 \rightarrow \cos n (\cos n + \sin n) = 0$$

$$\cos n = 0 \rightarrow n = k\pi + \frac{\pi}{2}$$

$$\sin n = -1 \rightarrow n = k\pi - \frac{\pi}{2}$$

$$\sqrt{1 + \sin 2n} = \sqrt{2} \cos n \xrightarrow{\text{توان ۲}} 1 + \sin 2n = 2 \cos^2 n$$

سوال ۹

$$1 + \sin 2n = 2 - 2 \sin^2 n \rightarrow 2 \sin^2 n + \sin 2n - 1 = 0 \rightarrow \sin 2n = -1$$

$$\sin 2n = -1 \rightarrow 2n = k\pi - \frac{\pi}{2} \xrightarrow{\substack{0 \leq n \leq \pi \\ k \in \mathbb{Z}}} n = \frac{3\pi}{4}$$

$$\hookrightarrow \sin 2n = \frac{1}{2}$$

$$\sin 2n = \frac{1}{2} \rightarrow 2n = k\pi + \frac{\pi}{6} \leq 2k\pi + \frac{5\pi}{6} \xrightarrow{\substack{0 \leq n \leq \pi \\ k \in \mathbb{Z}}} n = \frac{\pi}{12} \leq \frac{5\pi}{12}$$

چون عبارت به توان ۲ رسیده است جواب زائد تولید می‌کنند
به ازای $\cos 2n = \frac{5\pi}{12}$ متغیر می‌شود چنان جواب را بیابیم می‌توانیم

* معادله ۲ جواب دارد