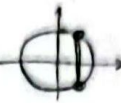


نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره ۱۰۰/۱ کلاس: ویرایش:
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$$\sec \alpha \Rightarrow 1 + \tan^2 \alpha \Rightarrow \sec \alpha \Rightarrow \frac{1}{\cos \alpha} \quad \cos \alpha = \frac{1}{\sec \alpha} \Rightarrow \cos \alpha = \frac{1}{2}$$

$$\cos \alpha = \frac{1}{2}$$

راه دوم: جواب دارد



جواب

$$\sec \alpha = \frac{1}{\cos \alpha} \Rightarrow \sec \alpha = 1 \Rightarrow \cos \alpha = 1 \Rightarrow \alpha = 2k\pi$$

$$\Rightarrow \cos \alpha = \frac{1}{2} \Rightarrow \alpha = 2k\pi \pm \frac{\pi}{3} \Rightarrow \alpha = \frac{\pi}{3} \text{ or } \alpha = \frac{5\pi}{3}$$

جواب نهایی

$$\cos \alpha = -2 - 2 \cos \alpha$$

$$-1 \leq \cos \alpha \leq 1 \Rightarrow -2 \leq -2 - 2 \cos \alpha \leq 2 \Rightarrow -2 \leq -2 - 2 \cos \alpha \leq 2 \Rightarrow \cos \alpha = -1$$

$$\cos \alpha = -1$$

در این مرحله مقادیر α را $0, \pi, 2\pi$ می‌گیریم. پس جواب $\alpha = \pi$ است.

پس جواب نهایی $\alpha = \pi$ است.

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

$$2 \sin \alpha (1 - \sin \alpha) + \sin \alpha = 1 \Rightarrow 2 \sin \alpha - 2 \sin^2 \alpha + \sin \alpha = 1 \Rightarrow 3 \sin \alpha - 2 \sin^2 \alpha = 1$$

$$\sin \alpha = 1 \Rightarrow \alpha = 2k\pi + \frac{\pi}{2} \Rightarrow \alpha = \frac{\pi}{2} \text{ or } \alpha = \frac{5\pi}{2}$$

پس جواب نهایی $\alpha = \frac{\pi}{2}$ و $\alpha = \frac{5\pi}{2}$ است.

$$\frac{1}{\sin(\frac{\pi}{2} + \alpha)} + \frac{1}{\cos(\frac{\pi}{2} + \alpha)} = \frac{1}{\sin(\frac{\pi}{2} + \alpha)} + \frac{1}{\cos(\frac{\pi}{2} + \alpha)} = 0 \Rightarrow \frac{-\sin \alpha + \cos \alpha}{(\cos \alpha)(-\sin \alpha)} = 0$$

$$\Rightarrow \sin \alpha = \cos \alpha \Rightarrow 2 \sin \alpha \cos \alpha = \cos \alpha \Rightarrow \cos \alpha (2 \sin \alpha - 1) = 0 \Rightarrow \cos \alpha = 0 \text{ or } \sin \alpha = \frac{1}{2}$$

$$\Rightarrow \alpha = 2k\pi + \frac{\pi}{2}, \alpha = 2k\pi + \frac{5\pi}{2} \Rightarrow \alpha = \frac{\pi}{2} \text{ or } \alpha = \frac{5\pi}{2}$$

$$\alpha = 2k\pi + \frac{\pi}{6} \text{ or } \alpha = 2k\pi + \frac{5\pi}{6} \Rightarrow \alpha = \frac{\pi}{6} \text{ or } \alpha = \frac{5\pi}{6}$$

$$\tan(2\alpha) = \tan\left(\frac{\pi}{3}\right) = \sqrt{3}$$

$$\cos\left(\alpha + \frac{\pi}{2}\right) = \frac{1}{\sqrt{2}} \Rightarrow \cos\left(\alpha + \frac{\pi}{2}\right) = \cos \alpha \cos \frac{\pi}{2} - \sin \alpha \sin \frac{\pi}{2} = \frac{\sqrt{2}}{2} (\cos \alpha - \sin \alpha)$$

$$\Rightarrow \frac{\sqrt{2}}{2} (\cos \alpha - \sin \alpha) = \frac{1}{\sqrt{2}} \Rightarrow \cos \alpha - \sin \alpha = \frac{1}{\sqrt{2}} \Rightarrow \alpha = \frac{\pi}{4} \text{ or } \alpha = \frac{3\pi}{4}$$

$\sin\left(n + \frac{\pi}{4}\right) \cos\left(n - \frac{\pi}{4}\right) = 1 \Rightarrow \cos\left(\frac{\pi}{4} - \left(n + \frac{\pi}{4}\right)\right) \cos\left(n - \frac{\pi}{4}\right) = 1 \Rightarrow \cos\left(\frac{\pi}{4} - n - \frac{\pi}{4}\right) \cos\left(n - \frac{\pi}{4}\right) = 1$ $\Rightarrow \cos\left(\frac{\pi}{4} - n\right) \cos\left(n - \frac{\pi}{4}\right) = 1$ فرمول $\cos(-\alpha) = \cos \alpha$ $\cos\left(n - \frac{\pi}{4}\right) \cos\left(n - \frac{\pi}{4}\right) = 1 \Rightarrow \cos^2\left(n - \frac{\pi}{4}\right) = 1 \Rightarrow \cos\left(n - \frac{\pi}{4}\right) = \pm 1$ $\cos\left(n - \frac{\pi}{4}\right) = 1 \Rightarrow n - \frac{\pi}{4} = 2k\pi \Rightarrow n = 2k\pi + \frac{\pi}{4}$ $\cos\left(n - \frac{\pi}{4}\right) = -1 \Rightarrow n - \frac{\pi}{4} = 2k\pi + \pi \Rightarrow n = 2k\pi + \frac{5\pi}{4}$ جواب: $n = \frac{\pi}{4}$ و $n = \frac{5\pi}{4}$ $\Rightarrow [0, 2\pi]$	6
$\sqrt{2} \sin\left(n + \frac{\pi}{4}\right) > 1$ $r \sin\left(n + \frac{\pi}{4}\right) > 1 \Rightarrow \sin\left(n + \frac{\pi}{4}\right) > \frac{1}{\sqrt{2}}$ $\sin\left(n + \frac{\pi}{4}\right) = \sin \frac{\pi}{4} \Rightarrow n + \frac{\pi}{4} = k\pi + \frac{\pi}{4} \Rightarrow k\pi \Rightarrow k\pi - \frac{\pi}{4}$ $n = k\pi + \frac{\pi}{4} - \frac{\pi}{4} = k\pi$ جواب: $n = 2\pi, 4\pi, 6\pi, 8\pi, 10\pi, 12\pi, 14\pi, 16\pi, 18\pi, 20\pi, 22\pi, 24\pi, 26\pi, 28\pi, 30\pi, 32\pi, 34\pi, 36\pi, 38\pi, 40\pi, 42\pi, 44\pi, 46\pi, 48\pi, 50\pi, 52\pi, 54\pi, 56\pi, 58\pi, 60\pi, 62\pi, 64\pi, 66\pi, 68\pi, 70\pi, 72\pi, 74\pi, 76\pi, 78\pi, 80\pi, 82\pi, 84\pi, 86\pi, 88\pi, 90\pi, 92\pi, 94\pi, 96\pi, 98\pi, 100\pi$	7
$\sin\left(\frac{\pi}{4} - n\right) > -\cos(n)$ $-\{\sin x \cos(n)\} > -2 \sin x \Rightarrow \sin x = -\frac{1}{2}$ $0 < x < 2\pi$ $0 < 2\pi < 2\pi$ جواب: $\frac{7\pi}{4}, \frac{5\pi}{4} + 2\pi, \frac{11\pi}{4}, \frac{11\pi}{4} + 2\pi$	8
$\frac{\sin^2 x \cos^2 x \cos^2 x \cos^2 x}{\sin^2 x} = \frac{1}{\lambda}$ $\frac{1}{\lambda} \frac{\sin^2 \lambda a}{\sin^2 a} = \frac{1}{\lambda} \Rightarrow \sin^2 \lambda a = \sin^2 a$ $\lambda a = k\pi \pm a \Rightarrow \forall a = k\pi \Rightarrow \frac{k\pi}{\lambda} = a$ جواب: $\frac{\lambda\pi}{9}$	9
$\tan x + \tan y = \cos(x+y)$ جواب: $\frac{2\pi + 2\pi + 4\pi + 8\pi}{2} = 5\pi$	10