آیدا نامداری
دوازدهم دختران B
تکلیف ۱۴

[1]

$\cos 2x = 3\sin x - 1$

$1 - 2\sin^2 x - 3\sin x + 1 = 0$

$-2t^2 - 3t + 2 = 0$

$9 - 4(-2)(2) = 25$

$\frac{3+5}{-4} = (-2)$ غق، $\frac{3-5}{-4} = \left(\frac{1}{2}\right)$

$\sin = \frac{1}{2}$ $\quad 2k\pi + \frac{\pi}{6}$, $\quad 2k\pi + \pi - \frac{\pi}{6}$

$\cos 2x + \cos x - 2 = 0$

$2\cos^2 x - 1 + \cos x - 2 = 0$

$2t^2 + t - 3 = 0$

$1 - 4(2)(-3) = 25$

$\frac{-1+5}{4}$ (1) $\quad \frac{-1-5}{4} = -\frac{3}{2}$ غق

$\cos = 1$

$x = 2k\pi$

[2]

$\sin^4 - \cos^4 = \sin 4x$

$(\sin^2 + \cos^2)(\sin^2 - \cos^2)$

$-\cos 2x = \sin 4x$

$-\cos 2x = 2\sin 2x \cos 2x$

$\cos 2x = 0$ $\quad 2x = k\pi + \frac{\pi}{2}$ $\quad \left(x = \frac{k\pi}{2} + \frac{\pi}{4}\right)$

$2\sin 2x = -1$ $\quad \sin 2x = -\frac{1}{2}$

$2x = 2k\pi - \frac{\pi}{6}$ $\quad \left(x = k\pi - \frac{\pi}{12}\right)$

$2x = 2k\pi + \pi + \frac{\pi}{6}$ $\quad \frac{7\pi}{6}$ $\quad \left(x = k\pi + \frac{7\pi}{12}\right)$

$2\cos^2 x + 2\sin\cos = 1$

$2\cos^2 x - 1 + 2\sin\cos$

$\cos 2x + \sin 2x = 0$

$\cos 2x = \sin(-2x)$

$\sin\left(\frac{\pi}{2} - 2x\right) = \sin(-2x)$

$-2x = 2k\pi + \frac{\pi}{2} + 2x$ غق

$-2x = 2k\pi + \pi - \frac{\pi}{2} + 2x$

$-4x = 2k\pi + \frac{\pi}{2}$

$x = -\frac{k\pi}{2} - \frac{\pi}{8}$

[4]

$\cot(2\cos x + 1) = \frac{1}{\sin x}$

$\frac{\cos}{\sin} \times \sin x (2\cos + 1) = 1$

$2\cos^2 + \cos - 1 = 0$

$2t^2 + t - 1 = 0$

$1 - 4(2)(-1) = 9$

$\frac{-1+3}{4} = \left(\frac{1}{2}\right)$, $\frac{-1-3}{4} = (-1)$

$x = 2k\pi + \pi$ ✗ $\quad \sin \neq 0$

$x = 2k\pi + \frac{\pi}{3}$

$x = 2k\pi - \frac{\pi}{3}$

$2\sin^2 - \sin\cos + \cos^2 = 2$

$\sin^2 + \sin^2 - \sin\cos + \cos^2 = 2$

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

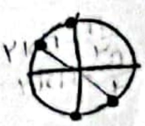
$-\sin\cos = \cos^2$

$-\sin\cos - \cos^2$

$\cos(-\sin - \cos) = 0$

$\cos = 0$

$\sin = -\cos$



$k\pi - \frac{\pi}{4}$

$k\pi + \frac{\pi}{2}$

٤

$\cos(\frac{\pi}{4}+x)\cos(x-\frac{\pi}{4})=\frac{1}{4}$

$\cos(\frac{\pi}{2}+x)\cos(\frac{\pi}{4}-x)=\frac{1}{4}$

$\sin(\frac{\pi}{2}+x)$

$\frac{1}{2}\sin(\frac{\pi}{2}+2x)=\frac{1}{4}$

$\sin(\frac{\pi}{2}+2x)=\frac{1}{2}$

$\frac{\pi}{2}+2x=2k\pi+\frac{\pi}{4}$ $\quad$ $\frac{\pi}{2}+2x=2k\pi+\pi-\frac{\pi}{4}$

$2x=2k\pi-\frac{2\pi}{4}$ $\quad$ $2x=2k\pi+\frac{3\pi}{4}$

$x=k\pi-\frac{\pi}{4}$ $\quad$ $x=k\pi+\frac{3\pi}{8}$

$\cos(2x-\frac{\pi}{9})=-\sin 2x$

$\sin(-2x)$

$\cos(\frac{\pi}{2}+2x)$

$2x-\frac{\pi}{9}=2k\pi+\frac{\pi}{2}+2x$ ليس

$2x-\frac{\pi}{9}=2k\pi-\frac{\pi}{2}-2x$

$4x=2k\pi-\frac{7\pi}{18}$

$x=\frac{k\pi}{2}-\frac{7\pi}{72}$

٥

$\frac{\sin 4x+\sin 2x}{\sin 2x}-\sin^2=\cos^2$

$\frac{\sin 4x+\sin 2x}{\sin 2x}=1$ $\quad$ $\sin 4x+\sin 2x=\sin 2x$

$\sin 4x=0$ $\quad$ $4x=k\pi$ $\quad$ $x=\frac{k\pi}{4}$

٦

$\frac{\sin\frac{x}{2}}{1+\cos\frac{x}{2}}=\frac{1}{\sin\frac{\pi}{2}}+\cot\frac{x}{2}$

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

$\frac{2\sin\frac{\pi}{4}\cos\frac{x}{4}}{2\cos^2\frac{x}{4}}=\tan\frac{x}{4}$

$\tan\frac{x}{4}=\cot\frac{x}{4}$

$\tan\frac{x}{4}=\tan(\frac{\pi}{2}-\frac{x}{4})$

$\frac{x}{4}=k\pi+\frac{\pi}{2}-\frac{x}{4}$

$\frac{x}{2}=k\pi+\frac{\pi}{2}$

$x=2k\pi+\pi$ $\quad$ $|\pi+\pi|=2\pi$

٧

$k=0$ $\quad$ π

$k=-1$ $\quad$ $-\pi$

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

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

$\sin^2 x$

$-\sin^2 x\cos^2 x-\sin^2 x=0$

$\sin^2 x(-\cos^2 x-1)=0$

$\cos^2 x=-1$

$2x=2k\pi+\pi$ $\quad$ $x=\frac{2k\pi}{3}+\frac{\pi}{3}$

$\sin=0$ $\quad$ $k\pi$

0	1	2
$\frac{\pi}{3}$	π	$\frac{5\pi}{3}$

0	1	2
0	π	2π

لا حلول

٨

$\frac{1-\tan x}{1+\tan x}=\tan 2x$

$\frac{\frac{\cos-\sin}{\cos}}{\frac{\sin+\cos}{\cos}}=\frac{\cos-\sin}{\sin+\cos}=\tan\pi$

9

$$\frac{\sqrt{1+\sin 2x}}{\sqrt{(\sin+\cos)^2}} = \sqrt{2}\cos 2x$$

$$1+\sin 2x = 2\cos^2 2x - 1$$

$$\cos 4x = \sin 2x$$

$$\cos 4x = \cos\left(\frac{\pi}{2} - 2x\right)$$

$$4x = 2k\pi + \frac{\pi}{2} - 2x$$

$$4x = 2k\pi - \frac{\pi}{2} + 2x$$

$$2x = 2k\pi - \frac{\pi}{2}$$

$$x = k\pi - \frac{\pi}{4}$$

$$6x = 2k\pi + \frac{\pi}{2}$$

$$x = \frac{k\pi}{3} + \frac{\pi}{12}$$

10

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

$$-\cos 2x = 1 \qquad \cos 2x = -1$$

$$2x = 2k\pi + \pi$$

$$x = k\pi + \frac{\pi}{2}$$

0	1
$\frac{\pi}{2}$	$\frac{3\pi}{2}$

$$\sin^3 - \cos^3 = -1$$

$$2\pi, \frac{3\pi}{2}$$