یکتا بیازی

مقطع: یازدهم دختر A

19

(۱)

$\cot\alpha = \frac{\cos\alpha}{\sqrt{1-\cos^2\alpha}}$, $\frac{1}{\sqrt{\cos^2\alpha}} - \frac{1}{\cot\alpha} = \frac{1-\sin}{|\cos|}$

↓

$\cot\alpha \to \frac{\cos}{\sin} = \frac{\cos}{|\sin|} \to \sin > 0 \to$ ناحیه ۱ یا ۲

$\frac{1}{|\cos|} - \frac{\sin}{\cos} = \frac{1-\sin}{|\cos|} \xrightarrow[\text{نکردیم}]{\text{صورت ش}}$ پس مخرج هم باید مثبت $\to \cos > 0 \to$ ۴ c ۲

~~۱~~ ۲

(۲)

$-\frac{\pi}{12} < x < \frac{5\pi}{12}$, $\sin 2x = \frac{m-1}{4} \to -\frac{1}{2} < \frac{m-1}{4} \le 1 \to -2 < m-1 \le 4$

$-\frac{\pi}{6} < 2x < \frac{5\pi}{6}$

$\boxed{-1 < m \le 5}$

۲

(۳)

$\tan + \cot = -3$ $\quad 3\pi < 4x < 4\pi$ $\quad \frac{3\pi}{4} < x < \pi$

$\sin\alpha\cos\alpha = -\frac{1}{3}$

$\underbrace{(\sin+\cos)^2}_{-\frac{1}{\sqrt3}} = \sin^2 + \cos^2 + 2\sin\cos$

$\frac{1}{\sin^3x + \cos^3x} = \frac{1}{\underbrace{(\sin+\cos)}_{\frac{1}{\sqrt3}}\underbrace{(\sin^2+\cos^2 - \sin\cos)}_{\frac{4}{3}}} = -\frac{3\sqrt3}{4}$

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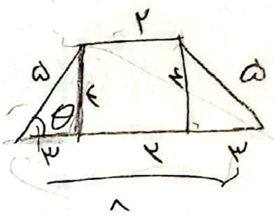
(۴)



$\cos\theta = \frac{3}{5}$ $\quad S = \frac{(8+2)4}{2} \to 20$

۲

(۵)

$\tan(\underbrace{285}_{\frac{3\pi}{2}+15}) \tan(-165) - \sin(165)\cos(\underbrace{255}_{\frac{3\pi}{2}+15}) = K\cos^2 15$

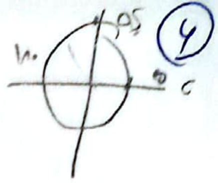
ناحیه ۴ $\quad -\tan(\pi - 15)$ ناحیه ۲ $\quad$ ناحیه ۳

$-\cot 15 \times (+\tan 15) - \sin 15 \times -\sin 15 =$

$\cancel{-1} + \underbrace{\sin^2 15}_{\cancel{1} - \cos^2 15} = -\cos^2 15 \to \underline{K = -1}$

۲

۶



$A = \sqrt{3}\cos(210)\sin(243) - \sqrt{2}\,\cancel{\sin(135)}\cos(153) =$

$\sqrt{3}\cos 30 \times \sin\left(\frac{3\pi}{2} - 27\right) + \cos(\pi - 27)$

$\sqrt{3} \times \frac{-\sqrt{3}}{2} \times -\cos 27 + \cos 27 \rightarrow 2/5\cos 27 \longrightarrow$ برابر ۲/۵

ص

۷

$f(x) = 16\cos^2(3x)\cos^2(6x)\cos^2(12x)\cos^2(24x)$

$16\cos^2\left(\frac{\pi}{12}\right)\cos^2\left(\frac{\pi}{6}\right)\cos^2\left(\frac{\pi}{3}\right)\cos^2\left(\frac{2}{3}\pi\right) = \qquad f\left(\frac{\pi}{36}\right) = ?$

ص

$\cancel{16}\frac{(\sqrt{6}+\sqrt{2})^2}{\cancel{16}} \times \frac{3}{4} \times \frac{1}{4} \times \frac{1}{4} = \frac{(8+4\sqrt{3}) \times 3}{64} \rightarrow \frac{(2+\sqrt{3})\,3}{16} \rightarrow \frac{6+3\sqrt{3}}{16}$

$\cos(45^\circ - 30^\circ) = \cos 45\cos 30 - \sin 45\sin 30$

$\frac{\sqrt{2}}{2} \times \frac{\sqrt{3}}{2} - \frac{\sqrt{2}}{4} \rightarrow \frac{\sqrt{6}-\sqrt{2}}{4}$

۸

$\frac{1-\sin x}{1+\sin x} = 4 \qquad \tan\frac{x}{2} = \frac{\sin\alpha}{1+\cos\alpha} = \frac{-0/6}{+0/2} \Rightarrow -3$

$4 + 4\sin = 1 - \sin$

$5\sin = -3 \rightarrow \sin = -\frac{3}{5} \qquad \cos = -\frac{4}{5}$

ص

۹

$\frac{\sin\theta}{1-\cos\theta} + \frac{1+\cos\theta}{\sin\theta} = k\cot\frac{\theta}{2}$

$\sin\alpha = 2\sin\left(\frac{\alpha}{2}\right)\cos\left(\frac{\alpha}{2}\right)$

$1 - \cos\alpha = 2\sin^2\left(\frac{\alpha}{2}\right)$

$1 + \cos\alpha = 2\cos^2\left(\frac{\alpha}{2}\right)$

ص

جایگذاری $\rightarrow \frac{2\sin\left(\frac{\alpha}{2}\right)\cos\left(\frac{\alpha}{2}\right)}{2\sin^2\left(\frac{\alpha}{2}\right)} + \frac{2\cos^2\left(\frac{\alpha}{2}\right)}{2\sin\left(\frac{\alpha}{2}\right)\cos\left(\frac{\alpha}{2}\right)} = 2\cot\frac{\alpha}{2} \rightarrow \boxed{k = 2}$

۱۰

ص

$\frac{\pi}{2} < \alpha < \pi \qquad \sin\alpha = \frac{\sqrt{2}}{10} \qquad \cos\left(\frac{11\pi}{4} + \alpha\right) = \qquad \frac{8\pi}{4} + \frac{3\pi}{4}\ (135)$

$\cos = \frac{-\sqrt{98}}{10}$

$\cos(A+B) = \cos A\cos B - \sin A\sin B = \cos\frac{3\pi}{4} \times \cos\alpha - \sin\frac{3\pi}{4} \times \sin\alpha$

$\left(-\frac{\sqrt{2}}{2} \times \frac{\sqrt{98}}{10}\right) - \left(\frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{10}\right) \Rightarrow \frac{3}{5}$