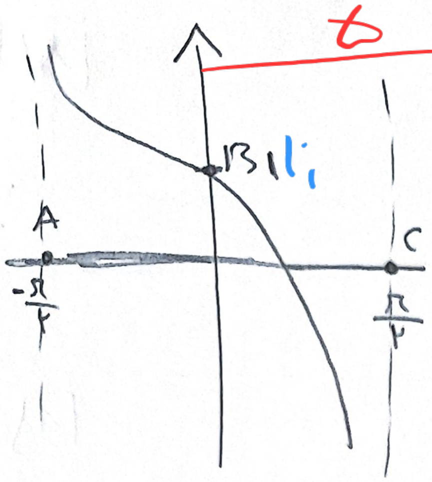
۳۰ درنیمسه تألیف ریاضی ۱ دوازدهم دفتر ۲ A

تألیف عنوان ۱۵

باسمان ← حتما مطالعه شود.



۱

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

C $\tan x$ دوره تناوب $= \frac{\pi}{|-2|} = \frac{\pi}{2}$

$-2x + \frac{\pi}{4} = -\frac{\pi}{2} \to x = -\frac{\pi}{8} = x_A$

$-2x + \frac{\pi}{4} = -\frac{\pi}{2} \to x = \frac{3\pi}{8} = x_B$

~~$L_{AC} = \frac{\pi}{2} - (\frac{\pi}{2}) = \pi \to S_{ABC} = \frac{\pi \times 1}{2} = (\frac{\pi}{2})$~~

$S_{ABC} = \frac{1}{2}(\frac{3\pi}{8} - (-\frac{\pi}{8})) = \frac{\pi}{4}$

۰/۵

۲

$x^2 - (\sin\alpha)x - \frac{1}{4}\cos^2\alpha = 0$

$x^2 - \sin\alpha x - \frac{1}{4}(1 - \sin^2\alpha) = 0 \longrightarrow x^2 - (\sin\alpha)x - \frac{1}{4} + \sin^2\alpha = 0 \xrightarrow{x = \frac{2}{3}}$

$\frac{4}{9} - \frac{2}{3}\sin\alpha - \frac{1}{4} + \sin^2\alpha = \longrightarrow \frac{16-9}{36} = \frac{7}{36} \longrightarrow \sin^2\alpha - \frac{2}{3}\sin\alpha + \frac{7}{36} = 0$ ۰/۵

$16 - 24\sin\alpha - 9(1 - \cos^2\alpha) = 16 - 24\sin\alpha - 9 + 9\sin^2\alpha = ..$

$\to \sin\alpha = \frac{7}{3}$ ✗ $\quad \sin\alpha = \frac{1}{3}$ ✓

$\tan^2\alpha = (\frac{1}{2\sqrt{2}})^2 \quad 1 + \tan^2\alpha = \frac{9}{8}$

۳

$\log(\sin\alpha) - \log(-\cos\alpha) = \log 3 \longrightarrow \log\frac{-\sin\alpha}{\cos\alpha} = \log 3$

$-\frac{\sin\alpha}{\cos\alpha} = 3 \longrightarrow -\tan\alpha = 3 \longrightarrow \tan\alpha = -3$

$\sin\alpha = \frac{3}{\sqrt{10}}$, $\cos\alpha = \frac{1}{\sqrt{10}}$ — $\sin\alpha$ مثبت و $\cos\alpha$ منفی هست.

~~$\sin\alpha - \cos\alpha = \frac{3}{\sqrt{10}} - \frac{1}{\sqrt{10}} = \frac{2}{\sqrt{10}}$~~ $\quad \frac{3}{\sqrt{10}} - (-\frac{1}{\sqrt{10}}) = \frac{4}{\sqrt{10}}$ ۱/۵

باید ضرب بوده باشد: ۰/۵ $\sin\alpha$، ۰/۵ $\sin\alpha$، ۰/۵ $-\cos\alpha$، $-\cos\alpha \to \cos\alpha$

۴

$\sin^4\theta + \cos^2\theta = \frac{4}{5} \longrightarrow \sin^4\theta - \sin^2\theta + \frac{1}{5} = 0$

$(\sin^2\theta)^2 + \cos^2\theta = \frac{4}{5}$

$(1 - \cos^2\theta)^2 + \cos^2\theta = \frac{4}{5} \to \cos^4\theta - \cos^2\theta = -\frac{1}{5}$

$\cos^4\theta - (1 - \sin^2\theta) = -\frac{1}{5} \to \cos^4\theta + \sin^2\theta = \frac{4}{5}$

۵

$\frac{3\sin x + \sin x\cos x}{2\sin^2\alpha} < 0 \longrightarrow \frac{(\sin x)(3 + \cos x)}{(2\sin^2\alpha) \to +} < 0 \to \sin x < 0$

$\frac{\sin^2 x - 1}{\cos x} = -\cos x > 0 \longrightarrow \cos x < 0 \quad \to$ ناحیه ۳

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۶

$\frac{2\cos\alpha + 3\sin\alpha}{\sin\alpha\cos\alpha} = 0$

$\frac{2\cos\alpha + 2\sin\alpha}{\sin\alpha\cos\alpha} = 0 \quad 2\cos\alpha + 2\sin\alpha = 0 \quad \div \cos\alpha$

$2 + 2\tan\alpha = 0 \quad \tan\alpha = -\frac{2}{2}$

$\tan\alpha + \cot\alpha = -\frac{2}{2} + \left(-\frac{2}{2}\right) = -\frac{12}{4}$

٧

$\frac{\sqrt{1+\sin 80}}{\sin 40 + \sin 10} \rightarrow \frac{\sqrt{1+\cos 40}}{\sin(30+10) + \sin(30-10)} = \frac{\sqrt{2}\cos 20}{2\sin 30 \cos 20} = \sqrt{2}$

١

$(1 - 2\sin^2 10)(2\cos^2 10 - 1)\left(\frac{1-\tan^2 20}{1+\tan^2 20}\right) \rightarrow \cos 2(20) - \sin^2 20 = \cos 40$

$\cos 10 \quad \sin 20 = 2\sin 10 \cos 10 \quad \frac{1}{\cos 20}$

$\cos 10 \times \cos 20 \times \cos 40 \times \frac{\sin 10}{\sin 10} = \frac{1}{8}\frac{\cos 10}{\sin 10} = \frac{1}{8}\cot 10$

٩

$\frac{\sin\alpha + 3\cos\alpha}{\cos\alpha} = 2 \rightarrow \sin\alpha + 3\cos\alpha = 2$

$\sin\alpha = 2 - 3\cos\alpha$ تربيع

$9\sin^2\alpha = 9\cos^2\alpha + 4 - 12\cos\alpha$

$1 - \cos^2\alpha = 9\cos^2\alpha + 4 - 12\cos\alpha$

$10\cos^2\alpha - 12\cos\alpha + 3 = 0 \rightarrow 10\left(\frac{1+\cos 2\alpha}{2}\right) - 12\cos\alpha + 3 = 0$

ب ← ١٠