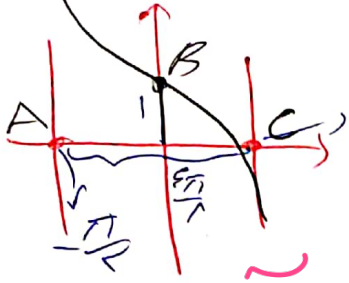


$S_{ABC} = ?$ $\frac{\pi}{3}$

$y = \tan(-\pi x + \frac{\pi}{3})$ ①

$x=0 \rightarrow \tan(\frac{\pi}{3}) = 1 \rightarrow B(0,1)$

$-\pi x + \frac{\pi}{3} = \frac{\pi}{2} \rightarrow x = -\frac{\pi}{8} \rightarrow A(-\frac{\pi}{8}, 0)$ ②

$-\pi x + \frac{\pi}{3} = -\frac{\pi}{2} \rightarrow x = \frac{5\pi}{8} \rightarrow C(\frac{5\pi}{8}, 0)$

۲۰ آذر

$1 \times \frac{1}{2} \times \frac{3\pi}{8} = \frac{3\pi}{16}$

$\frac{3}{\pi}$

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

$1 + \tan^2\alpha = ?$

$x = \frac{1}{2} \rightarrow \frac{16 - 24\sin\alpha - 9\cos^2\alpha}{36} \Rightarrow \frac{9\sin^2 - 24\sin\alpha + 7}{36} = 0$

$9\sin^2 - 24\sin + 7 = 0 \rightarrow (3\sin - 1)(3\sin - 7) \Rightarrow \sin\alpha = \frac{1}{3}$ ④

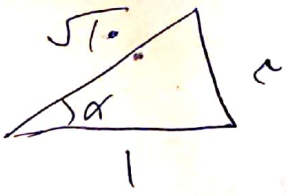
$\sin = \frac{1}{3} \rightarrow \cos = \frac{\sqrt{8}}{3} \rightarrow \frac{\sin}{\cos} = \frac{\frac{1}{3}}{\frac{\sqrt{8}}{3}} = \frac{1}{\sqrt{8}}$

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

$\log(\sin\alpha) - \log(-\cos\alpha) = \log 2$ ⑤

$\log_b^a \rightarrow a, b > 0$ $\sin\alpha > 0$, $\cos\alpha < 0$

$\log \frac{-\sin\alpha}{\cos\alpha} = \log 2 \rightarrow \tan\alpha = -2$



$\sin\alpha = \frac{3}{\sqrt{10}}$ $\cos\alpha = \frac{1}{\sqrt{10}}$

$\sin - \cos = \frac{3}{\sqrt{10}} - \frac{-1}{\sqrt{10}} = \frac{4}{\sqrt{10}}$

$\frac{4}{\sqrt{10}} \times \frac{\sqrt{10}}{\sqrt{10}} = \frac{4\sqrt{10}}{10} = \frac{2\sqrt{10}}{5}$

$\sin^4 + \cos^2 = \frac{4}{5}$ ⑥

$\cos^4 + \sin^2 = ? = \cos^4 + 1 - \cos^2$

$(\sin^2)^2$

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

$\cos^4 - \cos^2 = -\frac{1}{5} \rightarrow \cos^4 + 1 - \cos^2 = 1 - \frac{1}{5} = \frac{4}{5}$

$\frac{4}{5}$

$\frac{2\sin m + \sin m\cos m}{2 - 2\cos^2 m} < 0$ ⑦

$\sin m \tan m - \frac{1}{\cos m} > 0$

$\frac{\sin^2 m}{\cos m}$

$\cos \rightarrow -$

$\sin \rightarrow -$

$\frac{\sin(2 + \cos)}{2(1 - \cos^2)} < 0 \rightarrow \sin < 0$

$\frac{\sin^2 - 1}{\cos} = \frac{-(1 - \sin^2)}{\cos} = \frac{-\cos^2}{\cos} > 0 \rightarrow \cos m < 0$

$C \in 2$

۶

$\frac{۲}{\sin\alpha}+\frac{۴}{\cos\alpha}=۰$ $\quad \tan\alpha+\cot\alpha=?$

$\frac{۲}{\sin}+\frac{۳}{\cos}=\frac{۲\cos+۴\sin}{\sin\cos}=۰ \rightarrow \frac{۳\sin}{\sin\cos}=\frac{-۲\cos}{\sin\cos} \rightarrow \sin=\frac{-۲}{۳}\cos$

$\tan=\frac{-۲}{۳} \rightarrow \cot=\frac{-۳}{۲}$ $\quad \frac{-۲}{۳}+\frac{-۳}{۲} \rightarrow \frac{-۴-۹}{۶}=\frac{-۱۳}{۶}$ ✓ $\quad \frac{-۱۳}{۶}$

۷

$\frac{\sqrt{۱+\sin ۵۰}\cos ۴۰}{\sin ۷۰+\sin ۱۰}=\frac{\sqrt{\cos^۲ ۲۰+\sin^۲ ۲۰+\cos^۲ ۲۰}}{۲\sin ۳۰\cos ۲۰}=\frac{\sqrt{۴}\cos ۴۰}{۲\sin ۴۰\cos ۲۰}$

$\frac{۱}{\sqrt{۲}\sin ۴۰}=\frac{۱}{\sqrt{۲}\times\frac{۱}{۲}}=\frac{۲}{\sqrt{۲}}=\sqrt{۲}$ $\quad \sqrt{۴}$

۸

$\frac{(۱-۲\sin^۲ ۵۰)(۲\cos^۲ ۱۰-۱)}{\cos ۱۰}\left(\frac{۱-\tan^۲ ۲۰}{۱+\tan^۲ ۲۰}\right)\times\frac{\sin ۱۰}{\sin ۱۰}$

$\frac{۱}{۸}\frac{\sin ۸۰}{\sin ۱۸}=\frac{\cot ۱۰}{۸}=\frac{\tan ۸۰}{۸}$ $\quad \frac{\cot ۱۰^\circ}{۸}=\frac{\tan ۸۰^\circ}{۸}$

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۹

$\sin\alpha+۲\cos\alpha=۲$ $\quad ۵\cos^۲\alpha-۱۲\cos\alpha=?$

$\sin=۲-۲\cos\alpha$ $\quad \cos^۲\alpha-\sin^۲\alpha=۲\cos^۲\alpha-۱$

$\sin^۲=۴+۹\cos^۲-۱۲\cos$ $\quad ۵(۲\cos^۲\alpha-۱)-۱۲\cos\alpha=۱۰\cos^۲\alpha-۱۲\cos\alpha-۵$

$۱-\cos^۲$ ↓ $\quad -۲$ $\quad -۸$

$۱۰\cos^۲-۱۲\cos+۴=۰ \rightarrow ۱۰\cos^۲-۱۲\cos\alpha=-۴$ ✓ $\quad -۸$

۱۰

$\sin B\sin C=\cos^۲\frac{A}{۲}$ $\quad \hat{B}=۲۰^\circ$ $\quad \hat{A}=?$ $\quad A=۱۸۰-B-C$

$\frac{۱+\cos A}{۲} \rightarrow ۲\sin B\sin C=۱+\cos A$ $\quad \hat{A}=۶۰^\circ$

$۲\sin B\sin C=۱+\cos(\pi-(B+C))=۱-\cos(B+C)$ $\quad ۲\sin B\sin C=۱-\cos B\cos C$

$+\sin B\sin C \Rightarrow \sin B\sin C+\cos B\cos C=۱=\cos B\cos C+\sin B\sin C$

$=\cos(B-C)=۱=\cos(۰) \rightarrow B-C=۰ \rightarrow C=B-۱۲$

$A=۱۸۰-۲(۱۲)=۶۰$