غزل تاسیسی 15/5

لطفا مرتب تر بنویسید!

(1) $\tan(\frac{\pi}{4}) = 1$

$\frac{\pi}{2} = T$

$\frac{1 \times \frac{\pi}{2}}{2} = \frac{\pi}{4} = S$ مثلث

2

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

$\frac{\sin\alpha \pm \sqrt{\sin^2\alpha + 1 - \sin^2\alpha}}{2}$

$\frac{\sin\alpha + 1}{2} = \frac{2}{3}$

$\frac{\sin\alpha - 1}{2}$

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

$\cos\alpha = \frac{2\sqrt{2}}{3}$

$\frac{1}{\cos^2\alpha} = \frac{1}{\frac{8}{9}} = \frac{9}{8}$

2

(3) $\log \frac{\sin\alpha}{-\cos\alpha} = \log 3 \rightarrow \sin\alpha = -3\cos\alpha \quad -\sin\alpha + 3\cos\alpha = 0 \xrightarrow{\div \cos\alpha} \frac{\sin\alpha}{\cos\alpha} = -3$

$\log(\sin\alpha) \rightarrow \sin\alpha > 0 , \log(-\cos\alpha) \rightarrow \cos\alpha < 0$ ناحیه ۲

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

$\sin\alpha - \cos\alpha = -3\cos\alpha - \cos\alpha = -4\cos\alpha$

$-4\cos\alpha = -4(-\frac{1}{\sqrt{10}}) = +\frac{4}{\sqrt{10}} \quad \pm \frac{4}{\sqrt{10}}$

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

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

2

(5) $\frac{3\sin + \sin\cos}{2(\frac{1-\cos^2}{\sin^2})} < 0 \rightarrow \frac{\sin(3+\cos)}{2\sin^2} < 0 \rightarrow \frac{3+\cos}{2\sin} < 0$ همیشه مثبت است $\sin^2$ $2\sin < 0$ $\sin < 0$

$\sin \frac{\sin}{\cos} - \frac{1}{\cos} > 0 \rightarrow \frac{\sin^2 - 1}{\cos} > 0 \rightarrow \frac{-\cos^2}{\cos} > 0 \rightarrow -\cos > 0 \rightarrow \cos < 0$

ناحیه سوم

2

(6) $\frac{2}{\sin x} = -\frac{3}{\cos x} \rightarrow \frac{2}{-3} = \frac{\sin x}{\cos x} , \frac{\cos x}{\sin x} = -\frac{3}{2} \rightarrow \frac{-3}{2} + \frac{-2}{3} = \frac{-13}{6}$

2

(7)

0

(8) $(\sin^2 + \cos^2 - 2\sin^2) = \cos^2 - \sin^2 = \cos 10 \rightarrow \cos 10 \times \cos 20 \times \cos 40$

$2\cos^2 10 - \sin^2 10 - \cos^2 10 = \cos^2 10 - \sin^2 10 = \cos 20$

$\frac{\cos^2 20 - \sin^2 20}{\frac{\cos^2 20 + \sin^2 20}{1}} = \cos 40$

$\sin 10 \times$

$\sin 80 = \cos 10$

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

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(9) $5\cos^2 - 5\sin^2 - 12\cos$

$5\cos^2 - 5(1 - \cos^2) - 12\cos$

$5\cos^2 - 5 + 5\cos^2 - 12\cos$

$10\cos^2 - 12\cos - 5$

$10\cos^2 - 12\cos + 3 = 0$

-8

2

(10) $\cos \sin\, \sin C = \cos^2 \frac{A}{2}$

$A = 34$

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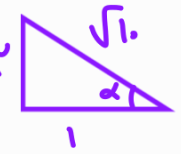
داشته $\rightarrow$ $\log(\sin\alpha) \rightarrow \sin\alpha > 0$

$\log(-\cos\alpha) \rightarrow -\cos\alpha > 0 \rightarrow \cos\alpha < 0$ } تقاطع دوم

$\log\left(\frac{\sin\alpha}{-\cos\alpha}\right) = \lg 3 \rightarrow -\tan\alpha = 3 \rightarrow \tan\alpha = -3$



$\sin\alpha = \frac{3}{\sqrt{10}}$, $\cos\alpha = \frac{-1}{\sqrt{10}} \rightarrow \sin\alpha - \cos\alpha = \frac{3}{\sqrt{10}} - \left(-\frac{1}{\sqrt{10}}\right) = \frac{4}{\sqrt{10}}$

سوال ۸

$1 - 2\sin^2 15^\circ = \cos 30^\circ$

$2\cos^2 30^\circ - 1 = \cos 60^\circ$ } فرمول‌های

$\frac{1 - \tan^2 20^\circ}{1 + \tan^2 20^\circ} = \frac{\cos^2 20^\circ - \sin^2 20^\circ}{\underbrace{\cos^2 20^\circ + \sin^2 20^\circ}_{1}} = \cos 40^\circ$ $\quad \cos(2\times 20^\circ) = \cos 40^\circ$

$\underbrace{(8\sin 10^\circ)\cos 10^\circ}_{\frac{1}{2}\sin 20^\circ} \times \cos 20^\circ \times \cos 40^\circ =$

$\frac{1}{2}\sin 20^\circ \times \cos 20^\circ \times \cos 40^\circ$

$\frac{1}{2} \times \frac{1}{2}\sin 40^\circ \times \cos 40^\circ =$

$\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}\sin 80^\circ = \frac{\frac{1}{8}\sin 80^\circ}{\sin 10^\circ} = \frac{1}{8}\cot 10^\circ$ $\quad \cot 10^\circ = \frac{\cos 10^\circ}{\sin 10^\circ}$

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$\sqrt{1+\sin 40^\circ} = \sqrt{1+\cos 50^\circ}$ $\xrightarrow[1+\cos 2\theta = 2\cos^2\theta]{\text{فرمول‌های}}$ $1+\cos 50^\circ = 2\cos^2 25^\circ$ $\quad \sqrt{2\cos^2 25^\circ} = \sqrt{2}\,|\cos 25^\circ| = \sqrt{2}\cos 25^\circ$

$\sin 40^\circ + \sin 10^\circ = \sin(30^\circ + 10^\circ) + \sin(30^\circ - 20^\circ) =$

$\sin 30^\circ\cos 10^\circ + \sin 10^\circ\cancel{\cos 30^\circ} + \sin 30^\circ\cos 10^\circ - \cancel{\sin 10^\circ\cos 30^\circ} = 2\left(\frac{1}{2}\right)\cos 10^\circ = \cos 10^\circ$

$\frac{\sqrt{2}\cos 25^\circ}{\cos 25^\circ} = \boxed{\sqrt{2}}$

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$\cos^2\frac{A}{2} = \frac{1+\cos A}{2} \rightarrow 2\sin B\sin C = 1 + \cos\hat{A}$ $\xrightarrow{A+B+C=\pi}$ $A = \pi - (\hat{B} + \hat{C})$

$1 + \cos(\pi - (B+C)) = 1 - \cos(B+C) = 2\sin B\sin C$

$1 - \cos B\cos C + \sin B\sin C = 2\sin B\sin C \rightarrow \sin B\sin C + \cos B\cos C = 1$

$\cos(B-C) = 1 \rightarrow \begin{cases} B - C = 0 \checkmark \\ B - C = 2\pi \times \text{غیرممکن} \end{cases} \rightarrow B = C \rightarrow A = 180^\circ - 144^\circ = 36^\circ$

$B + C = 2B$ $\quad (2\times 72)$