نام و نام خانوادگی ...مهدی رحیمی پور... پاسخنامه تشریحی تکلیف شماره ۱۵ ... کلاس دوازدهم تجربی ...

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$B \to x=0 \to y=\tan\frac{\pi}{4}=1$

$C \to y=-\infty \to y=\tan -\frac{\pi}{2} \to -2x+\frac{\pi}{4}=-\frac{\pi}{2} \to 2x=\frac{3\pi}{4} \to x=\frac{3\pi}{8}$

$A \to y=+\infty \to y=\tan\frac{\pi}{2} \to -2x+\frac{\pi}{4}=\frac{\pi}{2} \to 2x=-\frac{\pi}{4} \to x=-\frac{\pi}{8}$

$\to AC=\frac{3\pi}{8}+\frac{\pi}{8}=\frac{\pi}{2}$

$y_D=1$

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

۲

تعریف log: $\sin$ و $\cos<0$ است

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

چون $\sin\alpha<0$ ناحیه $\frac{3\pi}{2}<\alpha<2\pi$

$\to \sin\alpha-\cos\alpha = \frac{3}{\sqrt{10}}+\frac{1}{\sqrt{10}}=\frac{2\sqrt{10}}{5}$

جابجا

جابجا

۳

جایگذاری $\to \frac{4}{9}-\frac{2}{3}\sin\alpha-\frac{1}{4}\cos^2\alpha=\frac{4}{9}-\frac{2}{3}\sin\alpha+\frac{1}{4}\sin^2\alpha-\frac{1}{4}=0$

$\xrightarrow{\times 36} 16-24t+9t^2-9=0 \to 9t^2-24t+7=0 \to t=\frac{21}{9}, \frac{3}{9}$

$\to \sin\alpha=\frac{1}{3} \to \cos\alpha=\pm\frac{\sqrt{8}}{3} \to \cos^2\alpha=\frac{8}{9} \to \frac{1}{\cos^2\alpha}=\frac{9}{8}$

۴

$\frac{4}{5}=\sin^4\alpha-2\sin^2\alpha+1+\sin^2\alpha$

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

۵

$\frac{\sin\alpha(3+\cos\alpha)}{2\sin^2\alpha}<0 \to \sin\alpha<0$ ، $\frac{\sin^2\alpha}{\cos\alpha}-\frac{1}{\cos\alpha}>0 \to \frac{-\cos^2\alpha}{\cos\alpha}=-\cos\alpha>0$

$\to \cos<0$ و $\sin<0 \to$ ربع سوم

$$\frac{2\cos\alpha+3\sin\alpha}{\sin\alpha\cos\alpha}=0\to 2\cos\alpha=-3\sin\alpha\to\tan\alpha=-\frac{2}{3}\to\cot\alpha=\frac{3}{2}$$

$$\to\tan\alpha+\cot\alpha=-\frac{3}{2}-\frac{2}{3}=\frac{-9-4}{6}=-\frac{13}{6}$$ ۶

$$\cancel{A=\sqrt{1+2\sin\ldots\cos\ldots}}$$

$$\frac{\sqrt{1+\cos40^\circ}}{\cos80^\circ+\cos40^\circ}=\frac{\sqrt2\cos20}{-1+2\cos^2 40+\cos40^\circ}=\frac{\sqrt2\cos20}{2\cos^2 40^\circ+\cos40^\circ-1}=$$

$$\frac{\sqrt2\cos20^\circ}{(2t-1)(t+1)}=\frac{\sqrt2\cos20^\circ}{(2\cos40-1)(2\cos^2 20^\circ)}=\frac{\sqrt2}{2}\times\frac{1}{(4\cos^2 20-3)\cos20}=\frac{\sqrt2}{2}\times\frac{1}{4\cos^3 20^\circ-3\cos20^\circ}$$ ۷

$$=\frac{\sqrt2}{2}\times\frac{1}{\cos60^\circ}=\sqrt2$$

$$A=\cos10^\circ\cos20^\circ\cos40^\circ\to A=\frac{\sin10^\circ}{\sin10^\circ}\cos10^\circ\cos20^\circ\cos40^\circ\to A=\frac{\sin20\cos20\cos40}{2\sin10}$$

$$=\frac{\cos40\sin40}{4\sin10}=\frac{\sin80}{8\sin10}=\frac{1}{8}\frac{\cos10^\circ}{\sin10^\circ}=\frac{1}{8}\cot10^\circ$$ ۸

$$\cancel{a\sin x+b\cos x=\frac{a}{|a|}\sqrt{a^2+b^2}\sin(x+\theta)\ \ \tan\theta=\frac{a}{b}\ \ \sin\alpha+3\cos\alpha=\sqrt{10}\sin}$$

$$\sin\alpha=2-3\cos\alpha\xrightarrow{\text{توان ۲}}\sin^2\alpha=9\cos^2\alpha-12\cos\alpha+4\to 1=10\cos^2\alpha-12\cos\alpha+4$$

$$-3=10\cos^2\alpha-12\cos\alpha-5\to 2=5\cos2\alpha-12\cos\alpha$$ ۹

-8

$$\cancel{\ldots}$$

$$\frac{a}{\sin A}=\frac{b}{\sin B}=\frac{c}{\sin C}\to\frac{a^2}{\sin^2A}=\frac{bc}{\sin B\sin C}=\frac{bc}{\cos^2\frac{A}{2}}=\frac{a^2}{\sin^2A}=\frac{a^2}{4\sin^2\frac{A}{2}\cos^2\frac{A}{2}}$$

$$\to bc=\frac{a^2}{4\sin^2\frac{A}{2}}\Rightarrow bc(1-\cos A)=a^2\to 2bc-2bc\cos A=a^2$$ ۱۰

$$a^2=b^2+c^2-2bc\cos A\to 2bc-2bc\cos A=b^2+c^2-2bc\cos A\to b^2+c^2-2bc=0$$

$$\to b=c\to\hat B=\hat C=72\to A=180-144=36^\circ$$