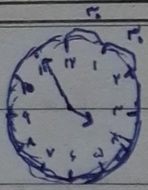
باران تماسی تکلیف شماره ۱۹

Subject: Year: Month: Day:

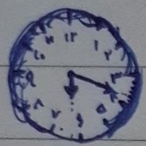


۱) الف) ← ۳:۵۴ $\quad 6+4\times30+27=153^\circ$

ب) $|(5.5\times54)-(30\times3)|=207$ $\quad 360-207=153$

۲) الف) ← ۶:۱۸ $\quad 9+30+30+6+6=81^\circ$ $\quad 60'\to30'$, $18'\to x=9^\circ$

ب) $|5.5\times18-30\times6|=81^\circ$



۳) الف) ?=S ⇐ $S=\frac{\frac{\pi}{6}}{2}\times R^2=\frac{\pi}{12}\times9=\frac{3\pi}{4}$

ب) ?=P $\quad \widehat{AB}=\frac{\pi}{6}\times R=\frac{\pi}{2}\Rightarrow R=3\to P=\widehat{AB}+2R=\frac{\pi}{2}+6$

۴) الف) ?=S ⇐ $\frac12 AB\times AC\times\sin60^\circ=5\times8\times\frac{\sqrt3}{2}=20\sqrt3\times\frac12=10\sqrt3$

ب) ?=P ⇐ $\overline{BC}=\sqrt{5^2+8^2-2\times5\times8\times\cos60^\circ}=\sqrt{49}=7$ $\quad P=8+7+5=20$ ($\cos60^\circ=\frac12$)

۵) $180-150=30=\hat A$ $\quad \frac{15}{\frac12}=\frac{15\sqrt2}{\sin B}\to\sin\hat B=\frac{\frac12\times15\sqrt2}{15}=\frac{\sqrt2}{2}\Rightarrow B=45,\ \sout{135}$ $\quad C=150-45=105$

$45^\circ=\frac{\pi}{4}$ $\quad \frac{105}{180}=\frac{x}{\pi}$ $\quad x=\frac{7\pi}{12}$

۶) $\tan(\pi-\alpha)=-\tan\alpha$ $\quad \tan(2\pi-\alpha)=-\tan\alpha$

$3\tan(\pi+\alpha)=3\tan\alpha$ $\quad \tan(2\pi+\alpha)=\tan\alpha$

$\frac{-\tan\alpha+3\tan\alpha}{-\tan\alpha-\tan\alpha}=\frac{2\tan\alpha}{-2\tan\alpha}=-1$

۷) $\frac{\pi}{12}=15^\circ$ $\quad \tan15^\circ=a$ $\quad \tan75^\circ=\tan(90-15)=\cot15^\circ$ $\quad \tan105^\circ=(90+15)=\cot15^\circ$

$\tan165^\circ=\tan(180-15)=-\tan15^\circ$ $\quad \tan255^\circ=\tan(180+75)=\tan75^\circ=\cot15^\circ$ $\quad A=\frac{2\cot15^\circ-\cot15^\circ}{-3\tan15^\circ-\cot15^\circ}\Rightarrow$

$\frac{\frac1a}{-3a+\frac1a}=\frac{-1}{3a^2+1}$

۸) $\frac{(\sin x+\cos x)^2+(\sin x-\cos x)^2}{\sin^2x-\cos^2x}=\frac{2(\sin^2x+\cos^2x)+2\sin x\cos x-2\sin x\cos x}{\sin^2x-\cos^2x}=3$

$\sin^2x=1-\cos^2x$ $\quad 1-\cos^2x=\frac23+\cos^2x\Rightarrow\cos^2x=\frac16$ $\quad \sin^2x=\frac43\cos^2x$ $\quad \tan^2x=\frac{1-\cos^2x}{\cos^2x}=\frac{\frac56}{\frac16}=5$

۹) $\sin^2x=1-\cos^2x$ $\quad \frac{1-\cos^2x-2\cos^2x+1}{1-\cos^2x+2\cos^2x-1}=\frac{2-3\cos^2x}{\cos^2x}=4$ $\quad 4\cos^2x=2-3\cos^2x$ $\quad \cos^2x=\frac27$

$\sin^2x=$ $\quad 1-\frac27=\frac57$ $\quad \tan^2x=\frac{\sin^2x}{\cos^2x}=\frac{\frac57}{\frac27}=\frac52=2.5$

Pasha

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$\cos\left(\frac{\pi}{12}\right)$ $\cos\left(\frac{\theta}{2}\right) = \sqrt{\frac{1+\cos\theta}{2}}$ $\sqrt{\frac{1+\frac{\sqrt{3}}{2}}{2}} = \frac{\sqrt{2+\sqrt{3}}}{2}$

ب) $\sin(97/5)$ الف) $\cos(11/5)$

$97/5 + 11/5 = 90 \Rightarrow \sin(97/5) = \cos(11/5) = \frac{\sqrt{2+\sqrt{3}}}{2}$