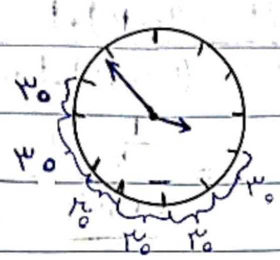
Subject: شماره تکلیف ۱۹ - دهم پسر A　　Date　　۱۹٫۷۵ آفرین!　　یار ریاضیاتی

۱-



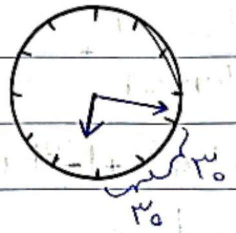
الف) $6\times 30+4\times 6+\left(30-\frac{54}{2}\right)=207^\circ$ (۲)

$360-207=153^\circ$ ✓

ب) $|5.5\times 54-30\times 3|=207$

$360-207=153^\circ$ ✓

۲- (۲)



الف) $2\times 30+2\times 6+\frac{18}{2}=81$ ✓

ب) $|5.5\times 18-30\times 6|=81$ ✓

۳- (۲)

الف) $\frac{a}{2}r^2=\frac{\frac{\pi}{6}\times 3^2}{2}=\frac{3\pi}{4}$ ✓

ب) $ar=\frac{\pi}{6}\times 3=\frac{\pi}{2}$ ✓

محیط کل قطعه $=2\times 3+\frac{\pi}{2}=6+\frac{\pi}{2}$

۴-

الف) $\frac{1}{2}\times 5\times 8\times \sin 60^\circ=20\times\frac{\sqrt{3}}{2}=10\sqrt{3}$ ✓ (۲)

ب) $BC=\sqrt{5^2+8^2-2\times 5\times 8\cos 60^\circ}=\sqrt{89-80\times\frac{1}{2}}=\sqrt{49}=7$

محیط: $5+7+8=20$ ✓

۵- (۲)

$\hat{B}+\hat{C}=150\Rightarrow \hat{A}=30^\circ$　　$\frac{15}{\frac{1}{2}}=\frac{15\sqrt{2}}{\sin B}\Rightarrow \sin B=\frac{\sqrt{2}}{2}$

$\sin B=\frac{\sqrt{2}}{2}\to B<\begin{matrix}45^\circ ✓\\ 135^\circ ✗\end{matrix}$ → حاده B

$\hat{B}+\hat{C}=150\Rightarrow \hat{C}=105$ (45)

$\hat{B}=45^\circ=\frac{\pi}{4}$ ✓　　$C=105^\circ\to\frac{105}{180}=\frac{Rad}{\pi}\Rightarrow Rad=\frac{7\pi}{12}=\hat{C}$ ✓

۶- (۲)

$\frac{\tan(\pi-a)+3\tan(\pi+a)}{\tan(2\pi-a)-\tan(2\pi+a)}\to\frac{-\tan a+3\tan a}{-\tan a-\tan a}=\frac{2\tan a}{-2\tan a}=-1$ ✓

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۷- $A=\frac{2\tan 75^\circ+\tan 10^\circ}{3\tan 145^\circ-\tan 200^\circ}=\frac{2\tan(90^\circ-15^\circ)+\tan(90^\circ+15^\circ)}{3\tan(180^\circ-15^\circ)-\tan(270^\circ-15^\circ)}$ (۲)

$\frac{\pi}{12}=15^\circ$

$\Rightarrow A=\frac{2\cot 15^\circ-\cot 15^\circ}{-3\tan 15^\circ-\cot 15^\circ}=\frac{2\times\frac{1}{a}-\frac{1}{a}}{-3a-\frac{1}{a}}=\frac{\frac{1}{a}}{\frac{-3a^2-1}{a}}=\frac{1}{-3a^2-1}=-\frac{1}{3a^2+1}$ ✓

۸- $\frac{\sin x+\cos x}{\sin x-\cos x}+\frac{\sin x-\cos x}{\sin x+\cos x}$ تقسیم صورت و مخرج بر $\cos x$ $\rightarrow \frac{\tan x+1}{\tan x-1}+\frac{\tan x-1}{\tan x+1}$ (۲)

$\frac{\tan x+1}{\tan x-1}+\frac{\tan x+1}{\tan x+1}=3 \Rightarrow \frac{\tan^2 x+1+2\tan x+\tan^2 x+1-2\tan x}{\tan^2 x-1}=\frac{2\tan^2 x+2}{\tan^2 x-1}=3$

$\Rightarrow 3\tan^2 x-3=2\tan^2 x+2 \Rightarrow \tan^2 x=5$ ✓

۹- $\frac{\sin^2 x-2\cos^2 x+1}{\sin^2 x+2\cos^2 x-1}=4$ (۲)

$\frac{\sin^2 x-2+2\sin^2 x+1}{\sin^2 x+2-2\sin^2 x-1}=\frac{3\sin^2 x-1}{1-\sin^2 x}=4 \Rightarrow 4-4\sin^2 x=3\sin^2 x-1$

$\Rightarrow 5=7\sin^2 x \Rightarrow \sin^2 x=\frac{5}{7}$

$1+\cot^2 x=\frac{1}{\frac{5}{7}}=\frac{7}{5} \Rightarrow \cot^2 x=\frac{2}{5} \Rightarrow \tan^2 x=\frac{5}{2}$ ✓

۱۰- الف) $\cos(22.5^\circ) \rightarrow \cos^2 22.5^\circ=\frac{1+\cos 45^\circ}{2}=\frac{1+\frac{\sqrt{2}}{2}}{2}=\frac{2+\sqrt{2}}{4}=\frac{2+\sqrt{2}}{2^2}$ (۱,۷۵)

$\cos^2 22.5^\circ=\frac{1+\sqrt{2}}{2} \Rightarrow \cos 22.5^\circ \begin{cases} -\frac{\sqrt{2+\sqrt{2}}}{2} & \times \\ \frac{\sqrt{2+\sqrt{2}}}{2} & \checkmark \end{cases}$

ب) $\sin(67.5^\circ) \rightarrow \sin^2 67.5^\circ=\frac{1-\cos 135^\circ}{2}=\frac{1+\frac{\sqrt{2}}{2}}{2}=\frac{2+\sqrt{2}}{4}$ $\quad -\cos 135^\circ=-\frac{\sqrt{2}}{2}$

$\sin^2 67.5^\circ=\frac{2+\sqrt{2}}{4} \Rightarrow \sin 67.5^\circ \begin{cases} -\frac{\sqrt{2-\sqrt{2}}}{2} & \times \\ \frac{\sqrt{2+\sqrt{2}}}{2} & \checkmark \end{cases}$