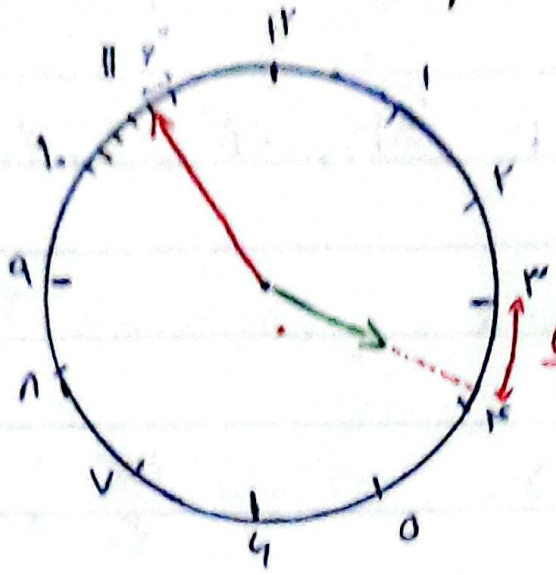
۲۰ آفرین!

امیرعلی میرداش «به نام خدا» تکلیف ۱۹ - پسر ۸

۱- الف)



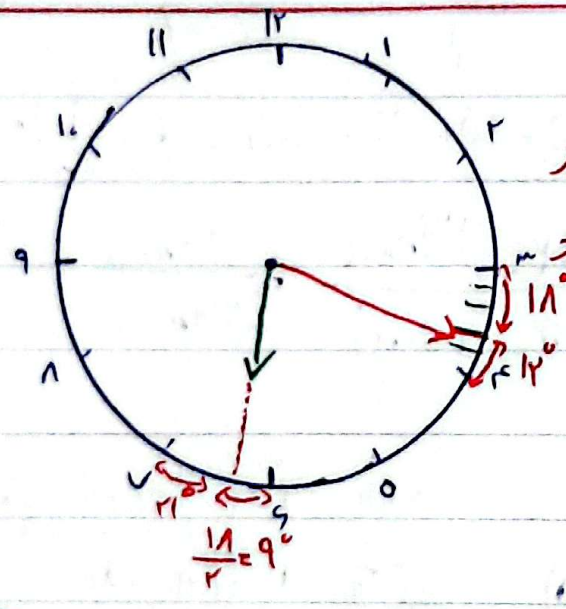
$\frac{54}{2} = 27^\circ$ ۲

$D = (4 \times 30) + 6 + 27 = 153^\circ$ ✓

ب) $|5.5m - 30h| =$ زاویه‌ی کمتر $|(5.5 \times 54) + 30 \times 3| = 153^\circ$ ✓

زاویه‌ی بزرگ‌تر $|(5.5 \times 54) - 30 \times 3| = 207^\circ$

۲- الف)



زاویه‌ی بزرگ‌تر $= 18 + 21 + (8 \times 30) = 279^\circ$

زاویه‌ی کوچک‌تر $= 12 + 9 + (2 \times 30) = 81^\circ$ ✓

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زاویه‌ی بزرگ‌تر بین دو عقربه $= |(5.5 \times 18 - 30 \times 6)| = 279^\circ$

اصل این است که $|5.5 \times 18 - 30 \times 6| = 81^\circ$ ✓ زاویه‌ی کوچک‌تر

۳- الف) مساحت قطاع $S = \frac{\alpha}{2} R^2 = \frac{\frac{\pi}{6}}{2} \times 9 = \frac{\pi}{12} \times 9 = \frac{3\pi}{4}$ ✓

ب) محیط $L = 2R + \overset{\frown}{AB}$ ، $\overset{\frown}{AB} = \alpha R \rightarrow L = 9 + \left(\frac{\frac{\pi}{6}}{2} \times 3\right) = 9 + \frac{\pi}{4}$ ✓ (۲)

۴- الف) مساحت مثلث $S = \frac{1}{2} ab \sin\alpha = \frac{1}{2} \times 10 \times 4 \times \sin 90 = 20 \times \frac{\sqrt{2}}{2} = 10\sqrt{2}$ ✓

ب) $\overline{CB} = \sqrt{a^2 + b^2 - 2ab\cos\alpha} = \sqrt{64 + 25 - \left(2 \times 8 \times 5 \times \frac{1}{2}\right)} = \sqrt{89}$ ✓

(۲)

$L = 5 + 8 + \sqrt{89} = 13 + 9.4 = 22.4$ ✓

$\hat{B} + \hat{C} = 100^\circ \rightarrow \hat{A} = 80^\circ$

$\frac{\text{طول کمان}}{\text{محیط دایره}} = \frac{\text{Rad}}{2\pi} \rightarrow \text{Rad} = \frac{\pi}{3}$ ✓ $C = \frac{\pi}{12}$ ✓ (۲) -۵

قانون سینوس‌ها: $\frac{10}{\sin 30^\circ} = \frac{10\sqrt{2}}{\sin\hat{B}} \rightarrow \frac{10}{\frac{1}{2}} = 20 = \frac{10\sqrt{2}}{\sin B} \rightarrow \sin B = \frac{\sqrt{2}}{2}$ ✓

$B = 45^\circ$ یا $B = 135^\circ$

$B = 45^\circ \rightarrow C = 100 - 45 = 55^\circ \rightarrow B = \frac{\pi}{4}$ ✓ ، $C = \frac{11\pi}{36}$ ✓

$\frac{\tan(\pi - \alpha) + 2\tan(\pi + \alpha)}{\tan(2\pi - \alpha) - \tan(2\pi + \alpha)} = \frac{-\tan\alpha + 2\tan\alpha}{-\tan\alpha - (+\tan\alpha)} = \frac{\tan\alpha}{-2\tan\alpha} = -\frac{1}{2}$ ✓ -۶

(۲)

سوال ۲ ←

$$A = \frac{2\tan(70) + \tan(100)}{2\tan(140) - \tan(200)} \div \frac{2\cot(10) - \cot(10)}{-2\tan(10) - \cot(10)}$$

(۲)

$$= \frac{\frac{2}{a} - \frac{1}{a}}{\frac{-2a^2}{a} - \frac{1}{a}} = \frac{\frac{1}{a}}{\frac{-2a^2 - 1}{a}} \div \frac{1}{-2a^2 - 1}$$

$$\frac{2\tan\left(\frac{\pi}{2} - 10\right) + \tan\left(\frac{\pi}{2} + 10\right)}{2\tan(\pi + 10) - \tan\left(\frac{3\pi}{2} - 10\right)}$$

↓

جواب

Subject:

Date:

$$\frac{\sin x+\cos x}{\sin x-\cos x}+\frac{\sin x-\cos x}{\sin x+\cos x}\rightarrow\frac{\sin^2 x+\cos^2 x+2\sin x\cos x+\sin^2 x+\cos^2 x-2\sin x\cos x}{\sin^2 x-\cos^2 x}$$

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

$$\left.\begin{array}{l}\cos^2 x+\sin^2 x=1\\ \cos^2 x+\sin^2 x=\frac{1}{2}\end{array}\right\}\xrightarrow{\text{حل}}\left.\begin{array}{l}2\sin^2 x=\frac{5}{3}\\ 2\cos^2 x=\frac{1}{3}\end{array}\right\}\tan^2 x=\frac{2\sin^2 x}{2\cos^2 x}=\frac{\frac{5}{3}}{\frac{1}{3}}=5$$ ✓

$$\frac{\sin^2 x-2\cos^2 x+1}{\sin^2 x+2\cos^2 x-1}=\frac{1-\cos^2 x-2\cos^2 x+1}{1+\cos^2 x-1}=\frac{-3\cos^2 x+2}{\cos^2 x}=4$$ ۹ (۲)

$$\rightarrow 4\cos^2 x=-3\cos^2 x+2\rightarrow 7\cos^2 x=2\rightarrow\cos^2 x=\frac{2}{7}$$

$$\sin^2 x=1-\frac{2}{7}=\frac{5}{7}\rightarrow\tan^2 x=\frac{\frac{5}{7}}{\frac{2}{7}}=\frac{5}{2}=2.5$$ ✓

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۱۰ (۲)

الف) $\cos(22.5^\circ)\Rightarrow\frac{1+\cos 45^\circ}{2}=\frac{1+\frac{\sqrt{2}}{2}}{2}=\frac{2+\sqrt{2}}{4}=\cos^2(22.5)$

$\rightarrow\cos(22.5^\circ)\ \frac{\sqrt{2+\sqrt{2}}}{2}$ ✓

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

$\rightarrow\sin 67.5=\frac{\sqrt{2+\sqrt{2}}}{2}$ ✓