نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس ..... اسم .....

۱

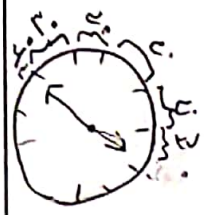
ب)

$\frac{11}{2}m + 2.h$

$\frac{11}{2} \times 27 + 30 \times 2 = 297 - 90 = 207$

$360 - 207 = 153^\circ$

ا)



$120 + 27 + 6 = 153^\circ$

۲

ب)

$\frac{11}{2}m - 20.h$

$\frac{11}{2} \times 18 - 20 \times 6 = 99 - 180$

$= 81^\circ$

ا)

$12 + 60 + 9 = 81^\circ$

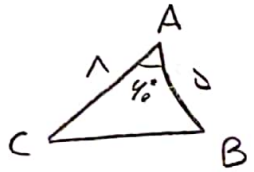
۳

ب) $\frac{\pi}{6} \times 3 = \frac{\pi}{2} + 4$

ا) $\frac{\pi}{12} \times 9 = \frac{3\pi}{4}$

۴

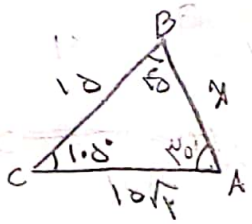
$S_{ABC} = \frac{1}{2} \times 5 \times 8 \times \sin 60^\circ = 10\sqrt{3}$



$P_{ABC} = 8 + 5 + 7 = 20$

$a^2 = 25 + 64 - 80 \cos 60^\circ = 89 - 40 = 49 \Rightarrow a = 7$

۵



$\frac{10}{\frac{1}{2}} = \frac{10\sqrt{3}}{\sin B}$

$\sin B = \frac{10\sqrt{3}}{2} \times \frac{1}{10} \Rightarrow B = 60^\circ = \frac{\pi}{3}$

$\Rightarrow C = 105 = \frac{7\pi}{12}$

$$\frac{-\tan\alpha + 2\tan\alpha}{-\tan\alpha - \tan\alpha} = \frac{2\tan\alpha}{-2\tan\alpha} = -1$$ ۶

$$\frac{2\tan(\frac{\pi}{2}-10) + \tan(\frac{\pi}{2}+10^\circ)}{2\tan(\frac{\pi}{2}-10^\circ) + \tan(\frac{5\pi}{2}-10^\circ)} = \frac{2\cot 10^\circ + \cot 10^\circ}{2\tan 10^\circ - \cot 10^\circ} = \frac{3\cot 10^\circ}{-3\tan 10^\circ + \cot 10^\circ}$$

$$= \frac{\frac{3}{a}}{-3-\frac{1}{a}} = \frac{\frac{3}{a}}{\frac{-3a-1}{a}} = \frac{3}{-3a-1}$$ ۴

$$\frac{(\sin^2\alpha+\cos^2\alpha)^2 + (\sin\alpha-\cos\alpha)^2}{\sin^2\alpha-\cos^2\alpha} = 2 \Rightarrow \frac{\sin^2\alpha+\cos^2\alpha + 2\sin\alpha\cos\alpha + \sin^2\alpha+\cos^2\alpha - 2\sin\alpha\cos\alpha}{\sin^2\alpha-\cos^2\alpha} = 2$$

$$\Rightarrow \frac{2}{\sin^2\alpha-\cos^2\alpha} = 2 \Rightarrow \sin^2\alpha-\cos^2\alpha = 1 \Rightarrow \sin^2\alpha-(1-\sin^2\alpha) = 1 \Rightarrow 2\sin^2\alpha-1 = 1 \Rightarrow \sin^2\alpha = 1 \Rightarrow \sin\alpha = 1$$

$$\tan^2\alpha = \frac{0}{\frac{1}{2}} = 0$$ ۸

$$\frac{\sin^2\alpha - 2(1-\sin^2\alpha)+1}{\sin^2\alpha+2(1-\sin^2\alpha)-1} = 4 \Rightarrow \frac{3\sin^2\alpha-1}{-\sin^2\alpha+1} = 4 \Rightarrow 3\sin^2\alpha-1 = 4\cos^2\alpha$$

$$2\sin^2\alpha + (\sin^2\alpha-1) = 4\cos^2\alpha \Rightarrow 2\sin^2\alpha = 5\cos^2\alpha \Rightarrow \frac{\sin^2\alpha}{\cos^2\alpha} = \frac{5}{2}$$ ۹

ب) $\cos 22^\circ 30' =$

$$\cos^2 22^\circ 30' = \frac{1+\cos 45^\circ}{2} \Rightarrow \cos^2 22^\circ 30' = \frac{\frac{2+\sqrt{2}}{2}}{2} \Rightarrow \cos 22^\circ 30' = \frac{\sqrt{2+\sqrt{2}}}{2}$$

ب) $\sin(67^\circ 30') = \sin(45^\circ + 22^\circ 30') = \sin 45^\circ \cdot \cos 22^\circ 30' + \cos 45^\circ \cdot \sin 22^\circ 30'$

$$= \frac{\sqrt{2}}{2} \times \frac{\sqrt{2+\sqrt{2}}}{2} + \frac{\sqrt{2}}{2} \times \frac{\sqrt{2-\sqrt{2}}}{2} = \frac{\sqrt{4+2\sqrt{2}}}{4} + \frac{\sqrt{4-2\sqrt{2}}}{4}$$ ۱۰