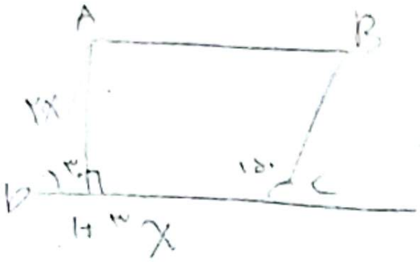


۱۹

$AD \times \sin 30^\circ = AH$

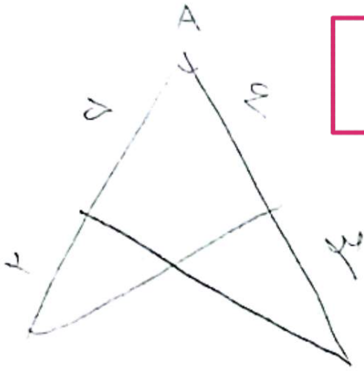
$\Rightarrow AH = x$

اعتراضی ...

$\Rightarrow x \times ۳x = ۵۴ \Rightarrow ۳x^2 = ۵۴$

$\Rightarrow x = ۳\sqrt{۲} \Rightarrow (۲x + ۴x) \times ۲ = \boxed{۳۶\sqrt{۲}}$ ✓

(۲)



$\boxed{S_\Delta = \frac{1}{۲} ab \sin\alpha}$

(۳)

(۱/۵)

$\frac{1}{۲} \times ۳ \times ۵ \sin \hat{A} - \frac{1}{۲} \times ۴ \times ۲ \sin \hat{A}$

$= ۱/۷۵ = \frac{۷}{۲} \sin \hat{A}$

$\Rightarrow \sin \hat{A} = \frac{1}{۲}$

$A = ۳۰^\circ$

$\tan A = \frac{\sqrt{۳}}{۳} \Rightarrow \tan\hat{A} = \sqrt{\frac{\sin^2 A}{1 - \sin^2 A}} = \frac{\sqrt{۱۵}}{۱۵}$

(۱۳)

$\frac{1}{|\cos\alpha|} - \frac{\sin\alpha}{\cos\alpha} = \frac{1 + \sin\alpha}{|\cos\alpha|}$ $\begin{cases} \sin\alpha = 0 \\ \cos\alpha < 0 \end{cases}$

(۲)

$\frac{|\sin\alpha|}{\cos\alpha} = -\frac{1}{\cot\alpha} \Rightarrow \cot\alpha \xrightarrow{\text{تعریف شده}} \sin\alpha \neq 0$

$\Downarrow$

$\frac{|\sin\alpha|}{\cos\alpha} = -\frac{\sin\alpha}{\cos\alpha} \Rightarrow \sin\alpha < 0$

ناحیه سوم ✓

(۱۴)

$\tan\alpha = \frac{-۱/۵}{۲} = -\frac{۳}{۴}$

(۲)

$\Rightarrow \tan(\frac{\pi}{۲} - \alpha) = \frac{\sin(\frac{\pi}{۲} - \alpha)}{\cos(\frac{\pi}{۲} - \alpha)} = \frac{\cos(\alpha)}{\sin(\alpha)} = \boxed{\cot\alpha = -\frac{۴}{۳}}$ ✓

۵ — ۱,۷۵ — دقت!

$$\frac{3\cos(270-22) - 2\sin(180-22)}{\sin(180+22) - \cos(270+22)}$$

$$= \frac{-3\sin(22) - 2\sin(22)}{-\sin(22) - \sin(22)} = \frac{1}{2}$$

$\frac{5}{2}$

۶

$$\cos\alpha = \frac{2}{3} \Rightarrow \sin\alpha = -\frac{\sqrt5}{3} \Rightarrow \tan\alpha = -\frac{\sqrt5}{2}$$

۲

$$\sin\left(\frac{\pi}{2}+\alpha\right) = \cos(\alpha)$$

$$\sin(\alpha-\pi) = -\sin(\alpha) \Rightarrow \frac{\sin\alpha + \cos\alpha}{\left|\frac{5}{4}-1\right|}$$

$$= \frac{\frac{2-\sqrt5}{3}}{\frac{1}{4}} = \frac{8-4\sqrt5}{3}$$ ✓

۷

$$\sin^2\alpha + \cos^2\alpha = 1 = 4\cos^2\alpha + \cos^2\alpha$$ ۲

$$\Rightarrow |\cos\alpha| = \frac{\sqrt5}{5}$$

$\cos < 0$

$$\Rightarrow \cos\alpha = -\frac{\sqrt5}{5}$$ ✓

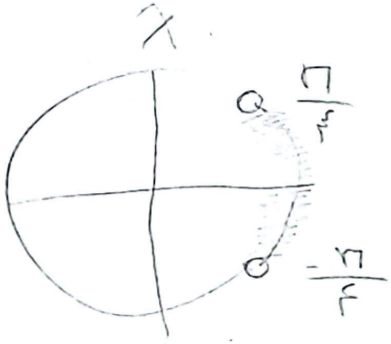
۸ — ۱,۷۵

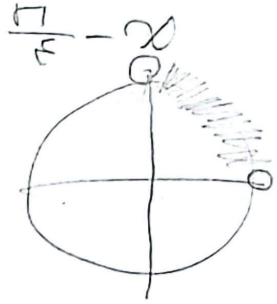
$$y = \frac{-2m}{m^2-1}x + \frac{3}{m^2-1}$$

$$\frac{-2m}{m^2-1} = \tan 60^\circ \Rightarrow \sqrt3 m^2 + 2m - \sqrt3 = 0$$

$$\Rightarrow \frac{-2 \pm 4}{2\sqrt3} = m \Rightarrow m = \frac{1}{\sqrt3}, \ -\sqrt3 \ ?$$

✓ اختلاف → $\frac{4}{\sqrt3}$





(9)

$\Rightarrow \tan\left(\frac{\pi}{4}-x\right)$ (2)

$\Rightarrow \frac{1-m}{2+m} > 0 \Rightarrow$ $\Rightarrow m \in (-2, 1)$ ✓

(10)

$\tan(120) \times \sin(150) + \cos(210) \times \cos(120)$ (2)

$\frac{\cos^2 30}{\sin 30} + \frac{\sin^2 120}{\cos 120} = 2\left(-\frac{3}{4}+\frac{3}{2}\right)$ (5) ✓