باران عباسی — دهم B — تکلیف ۲۰

①

الف) $\left(\frac{\sqrt{2}}{2}-\frac{\sqrt{3}}{2}\right)\left(\frac{\sqrt{2}}{2}+\frac{\sqrt{3}}{2}\right) \Rightarrow \frac{2}{4}-\frac{3}{4}=\frac{-1}{4}$

ب) $\tan 210 = \frac{\sqrt{3}}{3} \longrightarrow \tan^2 210 = \frac{1}{3}$

$\cos 330 = \frac{\sqrt{3}}{2} \longrightarrow \cos^2 = \frac{3}{4}$

$\cos 135 = -\frac{\sqrt{2}}{2} \longrightarrow \cos^2 = \frac{1}{2}$

$\frac{1+3(\frac{1}{3})}{4(\frac{3}{4})+2(\frac{1}{2})} = \frac{2}{4} = \frac{1}{2}$

②

الف) $\cos, \sin 45 = \frac{\sqrt{2}}{2}$ $\quad \frac{\sqrt{2}}{2} \,\Big|\, \frac{\sqrt{3}}{6} \longrightarrow (\sqrt{3})^2 + O = (2\sqrt{3})^2 \longrightarrow A\hat{H}C$

$\hookrightarrow 3+O=12$

$\hookrightarrow 9 = x^2 \longrightarrow x = 3$ ، غ ق ق -3

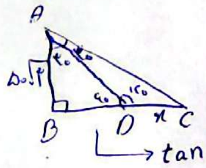
ب) $\tan 30 = \frac{\sqrt{3}}{3}$ $\quad AH \Rightarrow \frac{\sqrt{3}}{3} \,\Big|\, \frac{3\sqrt{3}}{9}$

$\cos 30 = \frac{\sqrt{3}}{2}$ $\quad AC = \frac{\sqrt{3}}{2} \,\Big|\, \frac{9}{6\sqrt{3}}$

$\frac{AH}{AB} = \sin B \longrightarrow \frac{3\sqrt{3}}{3\sqrt{6}} \longrightarrow \frac{\sqrt{3}}{\sqrt{6}} \Rightarrow \frac{\sqrt{18}}{6} \Rightarrow \frac{3\sqrt{2}}{6} = \frac{\sqrt{2}}{2} \to 45^\circ$

③

الف)

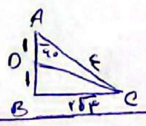


$\tan 60 = \sqrt{3}$ $\quad \frac{\sqrt{3}}{1} \,\Big|\, \frac{150}{50\sqrt{3}} \to BC$

$BC - BD = x \longrightarrow 150 - 50 = 100$

$\hookrightarrow \tan 30 = \frac{\sqrt{3}}{3}$ $\quad \frac{\sqrt{3}}{3} \,\Big|\, \frac{\boxed{50}}{5\sqrt{3}} \to BD$

ب)



$\cos 60 = \frac{1}{2} \longrightarrow \frac{1}{2} \,\Big|\, \frac{2}{4}$

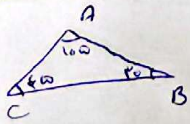
$\sin 60 = \frac{\sqrt{3}}{2} \longrightarrow \frac{\sqrt{3}}{2} \,\Big|\, \frac{2\sqrt{3}}{4}$

$1^2 + (2\sqrt{3})^2 = DC^2$

$1 + 12 = 13 \longrightarrow DC = \sqrt{13}$

$\sin\alpha = \frac{1}{\sqrt{13}} = \frac{\sqrt{13}}{13}$

④



$\frac{AB}{\sin C} = \frac{AC}{\sin B} = \frac{BC}{\sin A} \longrightarrow \frac{AB}{AC} = \frac{\sin C}{\sin B} \longrightarrow \frac{AB}{AC} = \frac{\sin 105}{\sin 30}$

$\sin 105 \to \sin(60+45) \longrightarrow \sin 60 \cos 45 + \cos 60 \sin 45 \longrightarrow \frac{\sqrt{6}+\sqrt{2}}{4}$

$\frac{\sin 105}{\sin 30} = \frac{\frac{\sqrt{6}+\sqrt{2}}{4}}{\frac{1}{2}} \longrightarrow \frac{\sqrt{6}+\sqrt{2}}{2}$

⑤

زاویه تغییر نکرده ← مساوی برابر است

$S = \frac{AB \sin\alpha}{2} \longrightarrow \frac{\frac{2\times4\times\sin B}{2}}{\frac{6\times3\times\sin B}{2}} = \frac{2\times4}{3\times6} = \frac{8}{18} = \frac{4}{9}$

④

الف) $2\left(\frac{4\times 4\times \sin 120}{2}\right) \longrightarrow 4\times 4\times \frac{\sqrt{3}}{2} = 8\sqrt{3}$

ب) $\frac{1}{2}ab\sin\alpha \xleftarrow{120^\circ} \frac{1}{2}\times 4\times 4\times \frac{\sqrt{3}}{2} \longrightarrow 4\sqrt{3}$

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⑦

$\tan\theta = \frac{4-2}{4-(-1)} = \frac{2}{4} = \frac{1}{2}$

$\longrightarrow \cos = \frac{2}{\sqrt{5}} \longrightarrow \frac{2\sqrt{5}}{5}$

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⑧

$\tan\theta = \frac{m_2 - m_1}{1+m_1m_2} \longrightarrow \frac{\tan 60 - \tan 30}{1+\tan 60\tan 30} \longrightarrow \frac{\sqrt{3}-1}{1+\sqrt{3}} \longrightarrow \left|\frac{m-1}{1+m}\right| = 2+\sqrt{3}$

$\frac{m-1}{1+m} = 2\sqrt{3}$ $\quad m = -\sqrt{3}$ منفی قابل قبول

$y = x + \frac{5}{2} \longrightarrow \frac{5}{2} = b$

$-\sqrt{3}\times\frac{5}{2} \longrightarrow -\frac{5\sqrt{3}}{2}$

هر دو از یک فاصله از عرض از مبدأ می گذرند ← عرض از مبدأ مساوی

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⑨

$f(x) = -\cos + \cos - (-\cot) \to \cot x$

$f\left(\frac{5\pi}{4}\right) \longrightarrow \cot 135^\circ \longrightarrow -1$

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⑩

$8\pi + \frac{\pi}{2} \longrightarrow \sin\left(\frac{17\pi}{2} + x\right) \longrightarrow \sin\left(\frac{\pi}{2} + x\right) = \cos x$

$4\pi + \frac{3\pi}{2} \longrightarrow \cos\left(\frac{11}{2}\pi + x\right) \longrightarrow \cos\left(\frac{5\pi}{2} - x\right) = -\sin x$

$\Big\}$ $\cos x - \sin x$ صورت

$\cos(3\pi + x) \Rightarrow \cos(\pi + x) \longrightarrow -\cos x$

$\sin(4\pi - x) = \sin(-x) \longrightarrow -\sin x$

$\Big\}$ $\sin x - \cos x$ مخرج

$\frac{\cos x - \sin x}{\sin x - \cos x} = \frac{\cos x - \sin x}{-(\cos x - \sin x)} = -1$