①

الف) $\left(\frac{\sqrt{۲}-\sqrt{۳}}{۲}\right)\left(\frac{-\sqrt{۲}+\sqrt{۳}}{۲}\right) = -\frac{۱}{۴}$

ب) $\frac{۱+۳\times\frac{۱}{۳}}{۴\times\frac{۳}{۴}+۱۲\times\frac{۲}{۴}} = \frac{۱}{۴}$

---

②

ضلع روبه‌رو به زاویه ۴۵° = $\frac{\sqrt{۲}}{۲}$ وتر است.

الف) $AH = \frac{\sqrt{۲}}{۲}\times\sqrt{۶} = \frac{\sqrt{۱۲}}{۲}$

$(HC)^۲ = (۲\sqrt{۳})^۲ - \left(\frac{\sqrt{۱۲}}{۲}\right)^۲$

$(HC)^۲ = \cancel{۴\times۳}^{۱۲} - \frac{\cancel{۱۲}^{۳}}{\cancel{۴}} \Rightarrow HC = \sqrt{۹} = \boxed{۳}$

ب) $\sin ۳۰ = \frac{۱}{۲} = \frac{AH}{۶\sqrt{۳}} \Rightarrow AH = ۳\sqrt{۳}$

$\cos ۳۰ = \frac{\sqrt{۳}}{۲} = \frac{۹}{AC} \Rightarrow AC = ۶\sqrt{۳}$

$\sin B = \frac{۳\sqrt{۳}}{۳\sqrt{۶}} = \frac{۱}{\sqrt{۲}} = \frac{\sqrt{۲}}{۲} \Rightarrow \hat{B} = ۴۵°$

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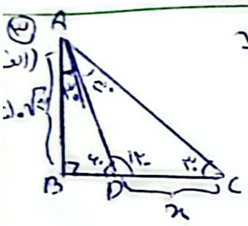
③



الف) $\frac{\sqrt{۳}}{۲}AD = AB \Rightarrow AD = ۱۰۰$

ضلع روبه‌رو به زاویه ۳۰ = $\frac{۱}{۲}$ وتر

$BD = ۲۵\sqrt{۳}$

$\Rightarrow x = ۱۰۰$

ب) $\frac{۱}{۲}x = ۲ \Rightarrow x = ۴$

$(\sqrt{۱۲})^۲ + ۱^۲ = (DC)^۲ \Rightarrow DC = \sqrt{۱۳}$

$\sin\alpha = \frac{۱}{\sqrt{۱۳}} = \frac{\sqrt{۱۳}}{۱۳}$

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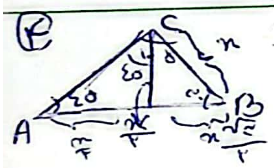
④



$\frac{\sqrt{۲}}{۲}AC = \frac{x}{۲} \Rightarrow AC = \frac{x}{\sqrt{۲}}$

$\frac{AB}{AC} = \frac{\frac{x+x\sqrt{۳}}{۲}}{\frac{x}{\sqrt{۲}}} = \frac{\sqrt{۲}+\sqrt{۶}}{۲}$

---

⑤

$\frac{۱}{۲}ab\sin\hat{C}$ $\quad B_۱ = B_۲$

$\frac{S_{A\hat{B}E}}{S_{B\hat{C}D}} = \frac{\cancel{\frac{۱}{۲}}\times۲\times۴\times\cancel{\sin B_۱}}{\cancel{\frac{۱}{۲}}\times۶\times۳\times\cancel{\sin B_۲}} = \frac{۸}{۱۸} = \boxed{\frac{۴}{۹}}$

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⑥

الف) $۲\left(\frac{۱}{۲}\times۳\times۴\times\sin۶۰\right) = ۶\sqrt{۳}$

ب) $\frac{۱}{۲}\times۴\times۳\times\frac{\sqrt{۳}}{۲} = ۳\sqrt{۳}$

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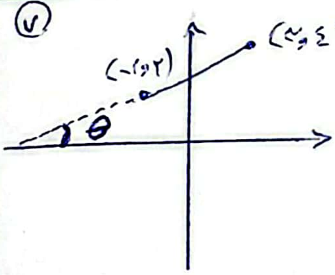
⑦



شیب $= \frac{۴-۲}{۳+۱} = \frac{۱}{۲}$

$\tan\theta = \frac{۱}{۲}$

$\tan^۲\theta + ۱ = \frac{۱}{\cos\theta}$

$\cancel{\frac{۱}{۴}+\frac{۴}{۴}} = \frac{۱}{\cos\theta}$

$\frac{۵}{۴}$

$\cos\theta = \frac{۲\sqrt{۵}}{۵}$

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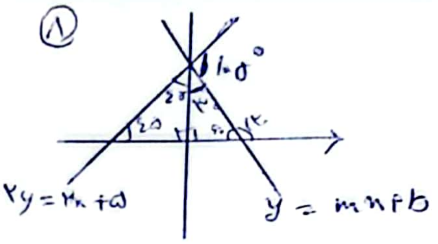
⑧



$y = x + \frac{۵}{۲}$

$\tan\theta = ۱ \Rightarrow \theta = ۴۵$

$\tan ۱۲۰ = \sqrt{۳}$

$m = \sqrt{۳} \quad , b = \frac{۵}{۲}$

$\Rightarrow y = \sqrt{۳}x + \frac{۵}{۲}$

$mb = \frac{۵}{۲}\times\sqrt{۳} = \frac{۵\sqrt{۳}}{۲}$

---

⑨

$\boxed{-\cancel{\cos x}+\cancel{\cos x}+\cot x}$

$\Rightarrow \cot x \Rightarrow \cot\left(\overset{۱۵۰°}{\cancel{\frac{۵\pi}{۶}}}\right)$

$= -\frac{\sqrt{۳}}{۳}$

---

⑩

$\frac{\cos x - \sin x}{-\cos x + \sin x} = \frac{-(\cancel{-\cos x + \sin x})}{\cancel{-\cos x + \sin x}} = -۱$

کوثر عبدی

دهم A

۲۰ تکلیف

۲۵