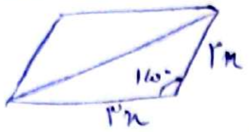
آقای کرمانی — پاسخنامه تشریحی میان‌ترم — یازدهم (هفتم) ریاضی A

①



$$54 = 2\left(\tfrac{1}{2} \times 2x \times 3x \times \sin 150^\circ\right) \Rightarrow \frac{54}{3} = x^2 \Rightarrow x = \sqrt{18} \Rightarrow$$

($\sin 150^\circ = \frac{1}{2}$)

$$\text{محیط} = \left(2\sqrt{18} + 3\sqrt{18}\right) \times 2 = 10\sqrt{18}$$

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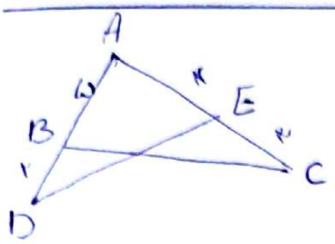
②



$$\left|\widehat{ADE} - \widehat{ABC}\right| = 1.75$$

$$S_{ABC} = \frac{1}{2}\sin A \times 5 \times 7 = \frac{35}{2}\sin A$$

$$S_{ADE} = \frac{1}{2}\sin A \times 7 \times 4 = \frac{28}{2}\sin A$$

$$\Rightarrow \frac{7}{2}\sin A = 1.75 \Rightarrow \sin A = \frac{1}{2} \Rightarrow A = 30^\circ$$

$$\tan 30^\circ = \frac{\sin 30^\circ}{\cos 30^\circ} = \frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

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③

$$\frac{1}{\sqrt{\cos^2\alpha}} - \tan\alpha = \frac{1+\sin\alpha}{|\cos\alpha|} \Rightarrow \sqrt{1+\tan^2\alpha} - \tan\alpha = \frac{1+\sin\alpha}{|\cos\alpha|}$$

$$\frac{|\sin\alpha|}{\cos\alpha} = -\frac{1}{\cot\alpha} \Rightarrow \frac{|\sin\alpha|}{\cos\alpha} = -\frac{\sin\alpha}{\cos\alpha} \Rightarrow |\sin\alpha| = -\sin\alpha \Rightarrow \sin\alpha < 0 \quad ①$$

$$\frac{1}{|\cos\alpha|} - \frac{\sin\alpha}{\cos\alpha} = \frac{1+\sin\alpha}{|\cos\alpha|} \Rightarrow \frac{1}{|\cos\alpha|} - \frac{1}{|\cos\alpha|} - \frac{\sin\alpha}{\cos\alpha} = \frac{\sin\alpha}{|\cos\alpha|}$$

$$\cos < 0 \; ② \Rightarrow ① \cap ② \Rightarrow \text{ناحیه سوم}$$

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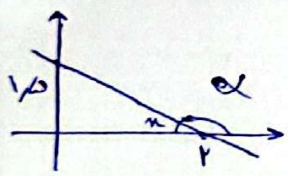
④



$$\tan x = \frac{1.5}{2} \Rightarrow \tan x = \frac{3}{4} \Rightarrow \tan\alpha = -\frac{3}{4}$$

$$\tan\left(\frac{\pi}{2} - (\pi - x)\right) = \tan\left(-\frac{\pi}{2} + x\right) = \cot\alpha = -\frac{4}{3}$$

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⑤

$$\frac{3\cos(248) - 2\sin(158)}{\sin(202) - \cos(292)} = \frac{3\cos(270-22) - 2\sin(180-22)}{\sin(180+22) - \cos(270+22)} = \frac{-3\sin 22 - 2\sin 22}{-\sin 22 - \sin 22} = \frac{-5\sin 22}{-2\sin 22} = \frac{5}{2}$$

⑥

$$\frac{\sin\left(\frac{\pi}{2}+\alpha\right)-\sin(\alpha-\pi)}{|\tan^2\alpha-1|} \cdot \frac{\cos\alpha-\sin\alpha}{|\tan^2\alpha+1-2|} \cdot \frac{\cos^2\alpha+\sin\alpha}{\frac{1}{\cos^2\alpha}-2}$$

$$\sin\alpha=\sqrt{1-\cos^2\alpha}=\sqrt{1-\frac{8}{9}} \cdot \frac{\sqrt{\omega}}{3} \cdot \frac{-\sqrt{\omega}}{2}$$

$$\frac{1}{\frac{8}{9}}-2=\frac{9}{8}-\frac{8}{8}=\frac{1}{8}$$

$$\frac{\frac{2}{3}-\frac{\sqrt{\omega}}{3}}{\frac{1}{8}}, \frac{\frac{2-\sqrt{\omega}}{3}}{\frac{1}{8}}$$

$$\frac{8(2-\sqrt{\omega})}{6}, \frac{8-2\omega}{6}=-\frac{10}{3}$$

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⑦

$$\frac{\sin\alpha}{2m}=\frac{2\cos\alpha}{m} \Rightarrow m^2+(2m)^2=1 \Rightarrow m^2+4m^2=1 \Rightarrow \frac{1}{\omega}, m^2=\frac{1}{\sqrt{\omega}}, -\frac{1}{\sqrt{\omega}}=\cos\alpha$$

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$$\frac{\sqrt{\omega}}{\omega}=\cos\alpha$$

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⑧

$$2mx+(m^2-1)y=2^3 \Rightarrow y=\frac{-2m}{(m^2-1)}x+\frac{3}{m^2-1} \Rightarrow \frac{-2m}{m^2-1}=\sqrt{3} \Rightarrow -2m=\sqrt{3}m^2-\sqrt{3}$$

$$\tan 60^\circ=\sqrt{3}$$

$$\sqrt{3}m^2+2m-\sqrt{3}=0 \Rightarrow m^2+2m-3=0 \begin{cases} m=\frac{-3}{\sqrt{3}} \\ m=\frac{1}{\sqrt{3}} \end{cases} \Big\} \frac{4}{\sqrt{3}}=\frac{4\sqrt{3}}{3}$$

$$\frac{4\sqrt{3}}{3}$$

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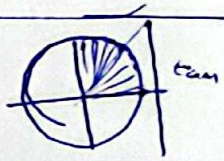
⑨

$$\frac{-\pi}{4}<x<\frac{\pi}{4}, \tan\left(\frac{\pi}{4}-x\right)=\frac{1-m}{2+m}$$



$$\frac{-\pi}{4}<x<\frac{\pi}{4} \Rightarrow -\frac{\pi}{4}<-x<\frac{\pi}{4} \rightarrow 0<\frac{\pi}{4}-x<\frac{\pi}{2} \Rightarrow$$

$$0<\frac{1-m}{2+m} \Rightarrow \frac{-2 \quad 1}{-|+|-} \rightarrow -2<m<1$$

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⑩

$$\tan(200)\cdot\cos(210)+\tan(480)\sin(180)\cdot\tan(\pi-60)\cdot\cos\left(\frac{3\pi}{2}-60\right)$$

$$\tan\left(\frac{3\pi}{2}-60\right)\cdot\cos\left(\frac{3\pi}{2}-60\right)+\tan(2\pi+120)\sin(2\pi+120)=-\tan 60^\circ\cdot\sin 60^\circ+\tan 120^\circ\cdot\sin 120^\circ$$

$$-\tan 60^\circ\cdot\sin 60^\circ+(-\tan 120^\circ)\cdot\sin 120^\circ=\sqrt{3}\cdot\frac{-\sqrt{3}}{2}+(-\sqrt{3})\left(\frac{\sqrt{3}}{2}\right)=0$$