

نام و نام خانوادگی علی حسینی یارن پاسخنامه تشریحی تکلیف شماره ۱۸ کلاس برپا

۱۷، ۵

$$\text{الف) } \tan \frac{11\pi}{4} + \sin \frac{15\pi}{4} \cos \frac{13\pi}{4} = \tan \frac{3\pi}{4} + \sin \frac{5\pi}{4} \cos \frac{5\pi}{4} = \tan(135^\circ) + \sin(225^\circ) \cos(225^\circ)$$

$$= (-1) + \left(-\frac{\sqrt{2}}{2}\right) \left(-\frac{\sqrt{2}}{2}\right) = -1 + \frac{1}{2} = -\frac{1}{2}$$

$$\text{ب) } \tan \frac{17\pi}{6} \sin \frac{11\pi}{3} + \cos \frac{10\pi}{3} = \tan \frac{5\pi}{6} \times \sin \frac{5\pi}{3} + \cos \frac{4\pi}{3} = \tan(150^\circ) \sin(300^\circ) + \cos(240^\circ)$$

$$= \left(-\frac{1}{\sqrt{3}}\right) \times \left(-\frac{\sqrt{3}}{2}\right) + \left(-\frac{1}{2}\right) = 0 \quad \checkmark$$

$$\cot x = 4 \rightarrow \cot^2 x + 1 = \frac{1}{\sin^2 x} \rightarrow 16 + 1 = \frac{1}{\sin^2 x} \Rightarrow \sin^2 x = \frac{1}{17} \rightarrow \sin x = \sqrt{\frac{1}{17}} \rightarrow \sin^2 x + \cos^2 x = 1$$

$$\Rightarrow \cos^2 x = \frac{16}{17} \Rightarrow \cos x = \pm \frac{4}{\sqrt{17}}$$

اینجا باید اند

$$\frac{3 \cos x - \sin x}{\cos x + \sin x} = \frac{\frac{12}{\sqrt{17}} - \frac{\sqrt{17}}{\sqrt{17}}}{\frac{4}{\sqrt{17}} + \frac{\sqrt{17}}{\sqrt{17}}} = \frac{12 - \sqrt{17}}{\sqrt{17} + 4} \times \frac{\sqrt{17}}{\sqrt{17}} = \frac{12 - \sqrt{17}}{4 + \sqrt{17}} \times \frac{12 - \sqrt{17}}{4 - \sqrt{17}} = \frac{144 - 24\sqrt{17} + 1}{16 - 17} = \frac{145 - 24\sqrt{17}}{-1} = -145 + 24\sqrt{17}$$

$$\sin \alpha = 2 \cos \alpha \rightarrow \sin^2 \alpha + \cos^2 \alpha = 1 \rightarrow 4 \cos^2 \alpha + \cos^2 \alpha = 1 \Rightarrow \cos^2 \alpha = \frac{1}{5} \Rightarrow \cos \alpha = \pm \frac{1}{\sqrt{5}}$$

$$\cos \alpha = -\frac{1}{\sqrt{5}} \quad \checkmark$$

$$\text{الف) } \cos\left(\frac{11\pi}{4} + \alpha\right) = -\sin(\alpha) = -\frac{\sqrt{2}}{2}$$

$$\text{ب) } \sin\left(\frac{13\pi}{4} + \alpha\right) = -\cos(\alpha) = -\frac{\sqrt{2}}{2}$$

$$\tan \alpha = \frac{1}{\sqrt{3}} \rightarrow 1 + \frac{1}{49} = \frac{1}{\cos^2 \alpha} \Rightarrow \cos^2 \alpha = \frac{49}{50} \Rightarrow \cos \alpha = \pm \frac{7}{\sqrt{50}}$$

جواب صفری آخر

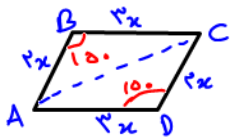
$$2 \sin^2 x + \cos^2 x = \frac{4}{3} \rightarrow \sin^2 x + \sin^2 x + \cos^2 x = \frac{4}{3} \Rightarrow \sin^2 x = \frac{1}{3} \Rightarrow \sin x = \pm \frac{1}{\sqrt{3}} \Rightarrow \cos x = \pm \frac{\sqrt{2}}{3}$$

$$\frac{1}{\frac{1}{\sqrt{3}}} = \frac{1}{\cos^2 x} = \tan^2 x + 1 \Rightarrow \tan^2 x = \frac{1}{3} \quad \checkmark$$

$$S_{\hat{A}BC} = \frac{1}{2} \cdot 5 \cdot \sqrt{5} \cdot \sin \alpha \cdot \frac{1}{5} \Rightarrow \sin \alpha = \frac{\sqrt{5}}{5} \Rightarrow \alpha = \begin{cases} 22.5^\circ \\ 157.5^\circ \end{cases} \rightarrow \frac{\max}{\min} = \frac{12.5}{6.25} = 2 \quad \checkmark$$

(2)

6



$$S_{\hat{A}BC} = 2x \cdot 2x \cdot \sin 10^\circ \cdot \frac{1}{2} \Rightarrow S_{ABCD} = 2x \cdot 2x \cdot \sin 10^\circ = 4x^2 \cdot \frac{1}{2} = 2x^2$$

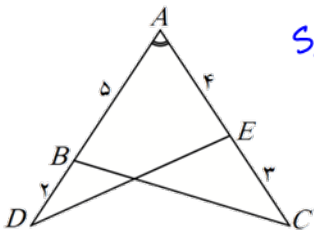
$$S_{\hat{A}DC} = 2x \cdot 2x \cdot \sin 10^\circ \cdot \frac{1}{2}$$

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$$2x^2 = \Delta f \Rightarrow x^2 = 1 \Rightarrow x = \sqrt{1} = 1 \Rightarrow \text{perimeter } ABCD = 2x + 2x + 2x + 2x = 10x$$

$$= 10 \cdot 1 \cdot \sqrt{5} = 10\sqrt{5} \quad \checkmark$$



$$S_{\hat{A}BC} - S_{\hat{A}DE} = |1, 2| = (\sin \hat{A} \cdot \Delta x \cdot (1+2) \cdot \frac{1}{2}) - (\sin \hat{A} \cdot (2+1) \cdot 1 \cdot \frac{1}{2})$$

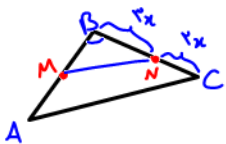
$$\cdot \langle \hat{A} \rangle \Rightarrow \sin \hat{A} > 0$$

$$= \frac{1}{2} \sin \hat{A} \left(\underbrace{\Delta x \cdot 3}_{3\Delta x} - \underbrace{(3 \cdot 1)}_{3\Delta x} \right) = \frac{1}{2} \sin \hat{A} \cdot 0 = 0 \Rightarrow \sin \hat{A} = \frac{1}{2} \Rightarrow \hat{A} = 30^\circ$$

$$\left(\frac{1}{2}\right)^2 + \cos^2 \hat{A} = 1 \Rightarrow \cos^2 \hat{A} = \frac{3}{4} \Rightarrow \cos \hat{A} = \frac{\sqrt{3}}{2} \Rightarrow \tan^2 + 1 = \frac{1}{\frac{3}{4}} = \frac{4}{3} \Rightarrow \tan \hat{A} = \frac{1}{\sqrt{3}} \quad \checkmark$$

(2)

8



$$\frac{\sin \hat{B} \cdot \frac{\Delta x}{2} \cdot \frac{BA}{2}}{\sin \hat{B} \cdot BM \cdot \frac{BN}{2}} = \frac{\Delta x \cdot BA}{2x \cdot BM} = 2 \Rightarrow \frac{\Delta x \cdot BA}{BM} = 4x \Rightarrow \frac{BA}{BM} = \frac{4x}{\Delta x} \Rightarrow AM = BA - BM = 4x$$

$$\Rightarrow \frac{BM}{AM} = \frac{\Delta x}{4x} = \frac{1}{4} \quad \checkmark$$

(2)

9

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

$$\frac{1}{\pm \cos \alpha} - \frac{\sin \alpha}{\cos \alpha} = \frac{1 - \sin \alpha}{\cos \alpha} = \frac{1 + \sin \alpha}{\pm \cos \alpha} = \begin{cases} \frac{1 + \sin \alpha}{\cos \alpha} \\ \frac{-1 - \sin \alpha}{-\cos \alpha} \end{cases} \Rightarrow \sqrt{\cos \alpha} = -\cos \alpha \Rightarrow \cos \alpha = 0$$

$$\Rightarrow \alpha \rightarrow \frac{\pi}{2} \quad \checkmark$$

(2)

10

$$\cos^2 \alpha = 1 - \sin^2 \alpha \rightarrow \cos^2 \alpha = \frac{9}{10} \xrightarrow{\text{جذر}} \cos \alpha = -\frac{\sqrt{2}}{10} \quad \text{بـ}$$

$$\cos\left(\frac{11\pi}{4} + \alpha\right) = \cos\left(\pi + \left(-\frac{\pi}{4} + \alpha\right)\right) = -\cos\left(\alpha - \frac{\pi}{4}\right)$$

$$= -\left(\cos \alpha \cos \frac{\pi}{4} + \sin \alpha \sin \frac{\pi}{4}\right) = -\left(-\frac{\sqrt{2}}{10} \times \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{10} \times \frac{\sqrt{2}}{2}\right) = \frac{1}{5}$$

$$\text{بـ)} \quad 1 + \frac{\tan^2 \alpha}{\frac{1}{49}} = \frac{1}{\cos^2 \alpha} \xrightarrow{\text{جذر}} \cos \alpha = \frac{\sqrt{2}}{10} \xrightarrow{\sin^2 \alpha + \cos^2 \alpha = 1} \sin \alpha = \frac{\sqrt{2}}{10}$$

$$\sin\left(\frac{13\pi}{4} + \alpha\right) = \sin\left(\pi + \frac{\pi}{4} + \alpha\right) = -\sin\left(\frac{\pi}{4} + \alpha\right) \xrightarrow{\text{جذر}} \frac{-1}{5}$$