

کیا فروغی (سوال ۴ بجای کمان و کمان در نظر نمی آید)

Year:

Month:

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Subject : (.....)

$$\frac{11\pi}{4} \times \frac{110^\circ}{\pi} = 495^\circ \quad 495^\circ - 360^\circ = 135^\circ \quad \tan 135^\circ = -1 \quad \text{الف}$$

$$\frac{10\pi}{4} \times \frac{110^\circ}{\pi} = 475^\circ \quad 475^\circ - 360^\circ = 115^\circ \quad \sin 115^\circ = -\frac{\sqrt{2}}{2}$$

$$\frac{13\pi}{4} \times \frac{110^\circ}{\pi} = 515^\circ \quad 515^\circ - 360^\circ = 155^\circ \quad \cos 155^\circ = -\frac{\sqrt{2}}{2}$$

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

$$\frac{14\pi}{4} \times \frac{110^\circ}{\pi} = 530^\circ \quad 530^\circ - 360^\circ = 170^\circ \rightarrow \tan 170^\circ = -\frac{1}{\sqrt{3}} \quad \text{ب}$$

$$\frac{11\pi}{3} \times \frac{110^\circ}{\pi} = 440^\circ \quad 440^\circ - 360^\circ = 80^\circ \rightarrow \sin 80^\circ = \frac{\sqrt{3}}{2}$$

$$\frac{10\pi}{3} \times \frac{110^\circ}{\pi} = 400^\circ \quad 400^\circ - 360^\circ = 40^\circ \rightarrow \cos 40^\circ = \frac{1}{2}$$

$$\frac{1}{2} + \left(\frac{1}{2}\right) = 0$$

$$\cot x = f \quad \frac{\cos x}{\sin x} = f \quad \cos x = f \sin x \quad \frac{12 \sin x - \sin x}{f \sin x + \sin x} = \boxed{\frac{11}{5}} \checkmark - 2$$

$$\sin^2 \alpha + \cos^2 \alpha = 1 \quad (\cos)^2 \alpha + \cos^2 \alpha = 1 \quad 2\cos^2 \alpha = 1 \quad \cos^2 \alpha = \frac{1}{2} - 3$$

$$\cos \alpha = \frac{\sqrt{5}}{5} \rightarrow \text{مع سر} \rightarrow \boxed{\cos \alpha = -\frac{\sqrt{5}}{5}} \checkmark$$

$$\cos x = -\sqrt{1 - \sin^2 x} = -\sqrt{1 - \frac{4}{100}} = -\sqrt{\frac{96}{100}} = -\frac{\sqrt{24}}{10} \quad \text{الف ۳}$$

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

$$\left(-\frac{\sqrt{2}}{2}\right)\left(-\frac{\sqrt{24}}{10}\right) - \left(\frac{\sqrt{2}}{2}\right)\left(\frac{\sqrt{2}}{10}\right) = \frac{\sqrt{2}}{10} - \frac{1}{10} = \frac{4}{10} = \boxed{\frac{2}{5}} \checkmark$$

$$\frac{\sin x}{\cos x} = \frac{1}{2} \quad \cos x = 2 \quad \sin x = 1 \quad \sqrt{1^2 + 2^2} = \sqrt{5} = \sqrt{5} \rightarrow \text{وتر} \quad \text{ب}$$

$$\sin x = \frac{1}{\sqrt{5}} = \frac{\sqrt{5}}{5} \quad \frac{13\pi}{4} \times \frac{110^\circ}{\pi} = 515^\circ \quad 515^\circ - 360^\circ = 155^\circ = \frac{5\pi}{4}$$

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

$$\sin\left(\frac{5\pi}{4} + x\right) \rightarrow \sin \frac{5\pi}{4} \cos x + \cos \frac{5\pi}{4} \sin x$$

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$$= \left(-\frac{\sqrt{2}}{2}\right)\left(\frac{2\sqrt{5}}{5}\right) + \left(-\frac{\sqrt{2}}{2}\right)\left(\frac{\sqrt{5}}{5}\right) = -\frac{\sqrt{2}}{5} - \frac{1}{5} = \boxed{-\frac{1+\sqrt{2}}{5}} \checkmark$$

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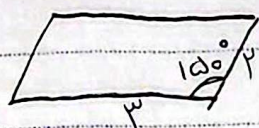
$$2\sin^2 x + \cos^2 x = \frac{4}{3} \rightarrow \sin^2 x = \frac{1}{3} \quad \cos^2 x = 1 - \sin^2 x = 1 - \frac{1}{3} = \frac{2}{3} = \frac{4}{3} - \frac{2}{3}$$

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

$$S = \frac{1}{2} ab \sin x = \frac{1}{2} \times \sqrt{3} \times 4 \times \sin x = 4 \quad \sin = \frac{120}{40} \quad \boxed{\frac{1}{2}} \quad \checkmark - 9$$

$$3\sqrt{3} \sin x = 4 \quad \sin x = \frac{4}{3\sqrt{3}} = \frac{\sqrt{3}}{3}$$

$$\sin x = \frac{\sqrt{3}}{3} \rightarrow x = 40^\circ / x = 140^\circ \rightarrow \text{بزرگ مقدار} \rightarrow \boxed{x = 120^\circ} = \frac{2\pi}{3}$$

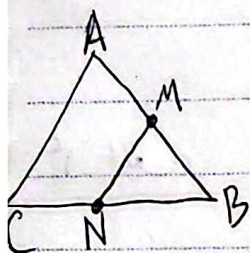


$$S = ab \sin \theta = (2k)(3k) \sin 150^\circ = 4k^2 \times \frac{1}{2} = 2k^2 = 12 \rightarrow k^2 = 6 \rightarrow k = \sqrt{6} = 2\sqrt{3}$$

$$ABC - ADE = \left(\frac{1}{2} \sin A \times 4 \times V \right) - \left(\frac{1}{2} \sin A \times 2 \times V \right) = \frac{2}{3} \sin A - \frac{1}{3} \sin A = \frac{1}{3} \sin A$$

$$= \frac{1}{3} \sin A = \frac{2}{3} \sin A = 1, V \quad \sin A = \frac{1}{2} \quad \cos A = \sqrt{1 - \sin^2} = \sqrt{1 - \frac{1}{4}} = \sqrt{\frac{3}{4}} = \frac{\sqrt{3}}{2}$$

$$\tan = \frac{\sin}{\cos} = \frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3} \quad \boxed{\frac{\sqrt{3}}{3}} \quad \checkmark \checkmark$$



$$2BN = 3NC$$

$$BN = 1, NC = 2$$

$$BC = 3, AN = 2$$

$$\frac{S_{ABC}}{S_{MBN}} = \frac{\frac{1}{2} \sin B \times 2 \times AN \times AB}{\frac{1}{2} \sin B \times 1 \times NC \times MB} = 9$$

$$= \frac{2 \times AB}{1 \times MB} = \frac{2AB}{MB} = 9 \rightarrow 2AB = 9MB \rightarrow AB = \frac{9}{2} MB = AM + MB$$

$$AM = \frac{7}{2} MB$$

$$\frac{AM}{BM} = \frac{7}{2}$$

$$\boxed{\frac{BM}{AM} = \frac{2}{7}} \quad \checkmark \checkmark$$

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$$\frac{1}{|\cos \alpha|} - \frac{1 + \sin \alpha}{|\cos \alpha|} = \tan \alpha \Rightarrow -\frac{\sin \alpha}{|\cos \alpha|} = \frac{\sin \alpha}{\cos \alpha} \quad -10$$

$$\Rightarrow -\frac{1}{|\cos \alpha|} = \frac{1}{\cos \alpha} \rightarrow \cos \alpha < 0 \rightarrow \text{ناحیہ ۲} \text{ (۱)}$$

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

$$\sin \alpha < 0 \rightarrow \text{ناحیہ ۲} \text{ (۲)}$$

$$\checkmark \boxed{\text{ناحیہ ۲}} \leftarrow (۲) \cap (۱)$$