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A گروه دوم دخترانه

تالیف شماره ۱۸۵

زحرفه ادهقانی

$$1) \tan \frac{11\pi}{8} + \sin \frac{15\pi}{8} \cos \frac{13\pi}{8}$$

$$= \tan\left(\frac{3\pi}{8}\right) + \sin\left(\frac{5\pi}{8}\right) \times \cos\left(\frac{5\pi}{8}\right)$$

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

$$2) \tan \frac{11\pi}{4} \sin \frac{11\pi}{4} + \cos \frac{10\pi}{4}$$

$$= \tan\left(\frac{3\pi}{4}\right) \times \sin\left(\frac{3\pi}{4}\right) + \cos\left(\frac{\pi}{2}\right)$$

$$= -\frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} + \left(-\frac{1}{2}\right) = \frac{2}{4} - \frac{1}{2} = 0$$

$$\frac{\cos x - \sin x}{\cos x + \sin x} =$$

cot x

Sinx

$$\frac{\cos x - \sin x}{\cos x + \sin x} \rightarrow \frac{\cot x - 1}{\cot x + 1}$$

$$\rightarrow \frac{\cot x - 1}{\cot x + 1} = \frac{11}{15}$$

$$\cos \alpha = \frac{1}{\omega} \quad \sin^2 \alpha + \cos^2 \alpha = 1 \rightarrow \epsilon \cos^2 \alpha + \cos^2 \alpha = 1 \quad \sin \alpha = \sqrt{\cos^2 \alpha}$$

$$\omega \cos^2 \alpha = 1 \rightarrow \cos \alpha = \sqrt{\frac{1}{\omega}}$$

$$\cos \alpha = -\sqrt{\frac{1}{\omega}} \quad \leftarrow \text{در ربع ۳}$$

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$$\cos\left(\frac{11\pi}{\varepsilon} + \alpha\right)$$

ع. الف

$$\Rightarrow \frac{11\pi}{\varepsilon} = 2\pi + \frac{3\pi}{\varepsilon}$$

$$\cos\left(\frac{11\pi}{\varepsilon} + \alpha\right) = \cos\left(\frac{3\pi}{\varepsilon} + \alpha\right)$$

$$\sin \alpha = \frac{\sqrt{2}}{10} \rightarrow \sin^2 \alpha = \frac{1}{50} \rightarrow \cos^2 \alpha = 1 - \frac{1}{50} = \frac{49}{50}$$

$$\cos \alpha = -\sqrt{\frac{49}{50}} = -\frac{7\sqrt{2}}{10}$$

$$\cos(\alpha + \beta) = \cos \alpha \cos \beta - \sin \alpha \sin \beta$$

$$\beta = \frac{3\pi}{\varepsilon}$$

$$\cos \frac{3\pi}{\varepsilon} = -\frac{\sqrt{2}}{2}$$

$$\sin \frac{3\pi}{\varepsilon} = +\frac{\sqrt{2}}{2}$$

$$\cos\left(\alpha + \frac{3\pi}{\varepsilon}\right) = \left(-\frac{7\sqrt{2}}{10}\right)\left(-\frac{\sqrt{2}}{2}\right) - \left(\frac{\sqrt{2}}{10}\right)\left(\frac{\sqrt{2}}{2}\right) = \frac{7}{10} - \frac{1}{10}$$

$$\rightarrow \frac{6}{10}$$

ب.

$$\tan \alpha = \frac{\sin \alpha}{\cos \alpha} = \frac{1}{7} \rightarrow \sec \alpha = \sqrt{1 + \frac{1}{49}} = \sqrt{\frac{50}{49}} = \frac{\sqrt{50}}{7}$$

$$\sin \alpha = \frac{1}{\sqrt{50}} = \frac{\sqrt{2}}{10}$$

$$\frac{13\pi}{\varepsilon} = 3\pi + \frac{\pi}{\varepsilon}$$

$$\cos \alpha = \frac{7}{\sqrt{50}} = \frac{7\sqrt{2}}{10}$$

$$\sin\left(\frac{13\pi}{\varepsilon} + \alpha\right) = -\sin\left(\alpha + \frac{\pi}{\varepsilon}\right)$$

$$\sin\left(\alpha + \frac{\pi}{\varepsilon}\right) = \sin \alpha \frac{\sqrt{2}}{2} + \cos \alpha \frac{\sqrt{2}}{2} = \frac{\sqrt{2}}{2} (\sin \alpha + \cos \alpha)$$

$$\sin \alpha + \cos \alpha = \frac{\sqrt{2}}{10} + \frac{7\sqrt{2}}{10} = \frac{8\sqrt{2}}{10}$$

$$\sin\left(\alpha + \frac{\pi}{\varepsilon}\right) = \frac{\sqrt{2}}{2} \times \frac{8\sqrt{2}}{10} = \frac{4}{5} \times \frac{8}{10} = \frac{32}{50} = \frac{16}{25}$$

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$$\tan^x u = ?$$

$$\sin^x u + \cos^x u = 1$$

$$\sin^x u = k \rightarrow \cos^x u = 1 - k$$

$$k + (1 - k) = \frac{e}{w}$$

$$k = \frac{1}{w}$$

$$\sin^x u = \frac{1}{w}$$

$$\cos^x u = \frac{1}{w}$$

$$\tan^x u = \frac{\sin^x u}{\cos^x u} = \frac{\frac{1}{w}}{\frac{1}{w}} = 1$$

$$S = \frac{1}{r} ab \sin C \rightarrow \frac{1}{r} \times \sqrt{w} \times 4 \times \sin C = \frac{e}{d}$$

$$\sin C = \frac{\frac{e}{d}}{\frac{\sqrt{w}}{r}} = \frac{1}{\sqrt{w}}$$

$$\alpha^x = w + w^2 - 12\sqrt{w} \cos C = w^2 - 12\sqrt{w} \cos C$$

$$\alpha_{\min}^x = w^2 - 12\sqrt{w} \times \frac{1}{r} = w^2 - 4\sqrt{w}$$

$$\alpha_{\max}^x = w^2 - 12\sqrt{w} \times \left(-\frac{1}{r}\right) = w^2 + 4\sqrt{w}$$

$$\frac{\alpha_{\max}}{\alpha_{\min}} = \frac{\sqrt{w^2 + 4\sqrt{w}}}{\sqrt{w^2 - 4\sqrt{w}}} = \frac{\sqrt{1w + 4\sqrt{w}}}{\sqrt{1w - 4\sqrt{w}}}$$

به صورت تقریبی $\rightarrow 1, 11w$

$$\therefore a = \sqrt{3}k, \quad b = k$$

V

$$A = ab \sin \theta = \omega \varepsilon \rightarrow \theta = 150^\circ \rightarrow \sin 150^\circ = \frac{1}{2}$$

$$\sqrt{3}k^2 = \omega \varepsilon$$

$$k^2 = 1 \wedge \rightarrow k = \sqrt{3}$$

$$a = \sqrt{3}k = 3\sqrt{3}$$

$$b = k = \sqrt{3}$$

$$b_{\text{total}} = \sqrt{3}(a+b) = \sqrt{3}(3\sqrt{3} + \sqrt{3}) = 12$$

$$S = \frac{1}{2} ab \sin A$$

1

$$S_{ABC} = k \times AB \times AC$$

$$S_{ADE} = k \times AD \times AE$$

$$S_{ABC} - S_{ADE} = k(AB \times AC - AD \times AE)$$

$$AB \times AC - AD \times AE = \omega \times V - V \times \varepsilon = \sqrt{3}\omega - \varepsilon = V$$

$$k \times V = \frac{V}{\varepsilon} \rightarrow k = \frac{1}{\varepsilon}$$

$$\tan A = \frac{1}{\sqrt{3}}$$

$$AM = u$$

$$BM = 1 - u, M(u, 0)$$

$$BN : NC = w : 1$$

$$N = B + \frac{w}{\epsilon} (C - B)$$

$$N = (1, 0) + \frac{w}{\epsilon} (-1, 1) = \left(\frac{1}{\epsilon}, \frac{w}{\epsilon}\right)$$

$$\frac{1}{v} |(M - B) \times (N - B)|$$

$$MB = (u - 1, 0), N - B = \left(-\frac{w}{\epsilon}, \frac{w}{\epsilon}\right)$$

$$|(u - 1) \times \frac{w}{\epsilon}| = \frac{w}{\epsilon} (1 - u)$$

$$\frac{1}{v} \times \frac{w}{\epsilon} (1 - u) = \frac{w}{\lambda} (1 - u)$$

$$\frac{w}{\lambda} (1 - u) = \frac{1}{w} \times \frac{1}{v} = \frac{1}{\epsilon}$$

$$\frac{w}{\lambda} (1 - u) = \frac{1}{\epsilon}$$

$$a(1 - u) = \epsilon$$

$$1 - u = \frac{\epsilon}{a} \quad u = \frac{a}{a}$$

$$\frac{BM}{AM} = \frac{1 - u}{u} = \frac{\frac{\epsilon}{a}}{\frac{a}{a}} = \frac{\epsilon}{a}$$

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$$1 \pm \frac{1}{\sqrt{\cos^2 \alpha}} - \tan \alpha \rightarrow \frac{1}{|\cos \alpha|} - \frac{\sin \alpha}{\cos \alpha}$$

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

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