

نام و نام خانوادگی: هجری شمسی: پاسخنامه تشریحی تکلیف شماره ۱.۱. کلاس: دبیران:
 صفحه ۴۵

الف) $\tan \frac{11\pi}{4} = 2\pi + \frac{3\pi}{4} = \frac{\sqrt{2}}{-\sqrt{2}} = -1$ $\sin \frac{15\pi}{4} = 2\pi + \frac{7\pi}{4} = \frac{-\sqrt{2}}{2}$
 $\cos \frac{13\pi}{4} = 2\pi + \frac{5\pi}{4} = \frac{\sqrt{2}}{2} \rightarrow \tan \frac{11\pi}{4} + \sin \frac{15\pi}{4} \cdot \cos \frac{13\pi}{4} = -1 + \left(\frac{-\sqrt{2}}{2} \cdot \frac{\sqrt{2}}{2} \right) = \boxed{-\frac{1}{2}}$
 ب) $\tan \frac{13\pi}{4} \cdot \sin \frac{11\pi}{3} + \cos \frac{6\pi}{3} = ?$ $\frac{-\sqrt{3}}{3} \times \frac{-\sqrt{3}}{2} + \left(-\frac{1}{2} \right) = \boxed{0}$
 $\tan 2\pi + \frac{5\pi}{3} = \frac{\sqrt{3}}{3} \mid \sin 2\pi + \frac{2\pi}{3} = \frac{\sqrt{3}}{2} \mid \cos 2\pi + \frac{\pi}{3} = \frac{1}{2}$

$\cot x = 4 \rightarrow \frac{\cos x}{\sin x} = \frac{4}{1} \rightarrow 4 \sin x = \cos x$
 $\frac{4(\sin x)}{4 \cos x - \sin x} = \frac{11 \sin x}{5 \sin x} = \frac{11}{5} = 2.2$

$\sin \alpha = 2 \cos \alpha \quad \cos \alpha = ? = \frac{-1}{\sqrt{5}}$

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

الف) $\cos \left(\frac{11\pi}{4} + \alpha \right) = \cos \left(2\pi + \frac{3\pi}{4} + \alpha \right) = \cos \alpha \cos \frac{3\pi}{4} - \sin \alpha \sin \frac{3\pi}{4}$ جواب اصلی $0.4 = \frac{4}{10} = \frac{12}{30}$
 $\cos \alpha = -\sqrt{1 - \left(\frac{\sqrt{2}}{10} \right)^2} = -\sqrt{1 - \frac{2}{100}} = -\sqrt{\frac{98}{100}} = \frac{-\sqrt{98}}{10} \rightarrow \left(\frac{-\sqrt{98}}{10} \right) \left(\frac{-\sqrt{2}}{2} \right) - \left(\frac{\sqrt{2}}{10} \right) \left(\frac{\sqrt{2}}{2} \right) = \frac{14-2}{20} = \frac{12}{20}$

ب) $\sin \left(\frac{13\pi}{4} + \alpha \right) = \sin \left(2\pi + \frac{5\pi}{4} + \alpha \right) = \sin \alpha \cos \frac{5\pi}{4} + \cos \alpha \sin \frac{5\pi}{4}$ $r = \sqrt{1^2 + 1^2} = \sqrt{2} = \sqrt{20} = \sqrt{20}$
 $\sin \frac{13\pi}{4} = -\sin \frac{5\pi}{4} = \frac{-\sqrt{2}}{2} \mid \cos \frac{13\pi}{4} = -\cos \frac{5\pi}{4} = \frac{-\sqrt{2}}{2} \mid \cos \alpha = \frac{\sqrt{2}}{\sqrt{20}}, \sin \alpha = \frac{1}{\sqrt{20}}$
 $\sin \alpha \cos \frac{5\pi}{4} + \cos \alpha \sin \frac{5\pi}{4} = \left(\frac{-\sqrt{2}}{2} \right) \left(\frac{\sqrt{2}}{10} + \frac{\sqrt{2}}{10} \right) = \frac{-\sqrt{2}}{2} \times \frac{2\sqrt{2}}{10} = \frac{-2}{10} = \boxed{-0.2}$

$2 \sin^2 x + \cos^2 x = \frac{5}{3} \quad \sin^2 x + 1 = \frac{5}{3} \quad \sin^2 x = \frac{1}{3}$

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

$\tan^2 x = \frac{\sin^2 x}{\cos^2 x} = \frac{\frac{1}{3}}{\frac{2}{3}} = \frac{1}{2} = \frac{1}{2}$

مساحت $S = \frac{1}{2} \times 4 \times \sqrt{3} \times \sin A = \frac{2\sqrt{3}}{1} \rightarrow \sin A = \frac{\sqrt{3}}{2}$

فلش: $a, 4, \sqrt{3}$

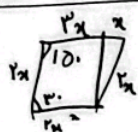
$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

$\sin C = \frac{\sqrt{3}}{a} = \frac{\sin B \times 4}{\sqrt{3}}$

$a = \sqrt{(\sqrt{3})^2 + 4^2 - 2 \times \sqrt{3} \times 4 \times \cos A} = \sqrt{3 + 16 - 8\sqrt{3} \cos A} = \sqrt{19 - 8\sqrt{3} \cos A}$

$a = \sqrt{3 + 16 + 8\sqrt{3} \cos A} = \sqrt{19 + 8\sqrt{3} \cos A}$

$\frac{a_{\max}}{a_{\min}} = \frac{\sqrt{(19+8\sqrt{3})^2}}{\sqrt{(19-8\sqrt{3})^2}} = \frac{19+8\sqrt{3}}{19-8\sqrt{3}}$



مساحت = (ارتفاع) $\times$ قاعده $\rightarrow x \times 10x = 10x^2 = 10 \rightarrow x^2 = 1$

$\rightarrow x = \pm \sqrt{1}$

$\rightarrow x = 1$

$\frac{1}{2} \times 10 \times 10 = 10 \times 10 = 100$



مساحت $\triangle ADE, \triangle ABC = 1, \sqrt{3}$

$\tan A = ?$

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

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

$S_{ABC} = \frac{1}{2} \times \sqrt{3} \times \sqrt{3} \times \sin A = \frac{3}{2} \sin A$

$\frac{1}{2} \sin A - \frac{1}{2} \sin A = \frac{1}{2} \sin A = \frac{1}{2} \rightarrow \sin A = \frac{1}{2} \rightarrow A = 30^\circ$



$BM = NC$

$\frac{1}{3} + 1 = \frac{1}{3} \times NC$

$\frac{BM}{AM} = ?$

$\frac{S_{ABC}}{S_{BMN}} = \frac{AB \cdot BC}{BM \cdot BN} \cdot \frac{AB}{BM} \times \frac{1}{3} = 3$

$\frac{AB}{BM} = \frac{9}{1}$

$\frac{BM}{AM} = \frac{1}{9} = \frac{1}{9}$

$\frac{1}{\cos \alpha} = \frac{1}{\cos \alpha} \rightarrow -\frac{\sin \alpha}{\cos \alpha} \rightarrow \sin \alpha < 0$

چون $1 - \sin \alpha$ مثبت است.

$\frac{1}{\sqrt{\cos \alpha}} - \tan \alpha = \frac{1 + \sin \alpha}{|\cos \alpha|} \rightarrow \frac{1}{|\cos \alpha|} - \frac{\sin \alpha}{\cos \alpha} \rightarrow \cos \alpha > 0$

ناممکن

چون $1 + \sin \alpha$ بزرگتر از $1 - \sin \alpha$ است، پس $\cos \alpha$ نیز مثبت است.