

نام و نام خانوادگی: هجری شمسی: پاسخنامه تشریحی تکلیف شماره ۱.۱. کلاس: ریاضیات:
نمره: ۴۵

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

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

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

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

الف) $\cos(\frac{11\pi}{4} + \alpha) = \cos(2\pi + \frac{3\pi}{4} + \alpha) = \cos \alpha \cos \frac{3\pi}{4} - \sin \alpha \sin \frac{3\pi}{4}$ جواب اصلی $0.14 = \frac{4}{10} = \frac{14}{100}$
 $\cos \alpha = -\sqrt{1 - (\frac{\sqrt{2}}{10})^2} = -\sqrt{1 - \frac{2}{100}} = -\sqrt{\frac{98}{100}} = -\frac{\sqrt{98}}{10} \rightarrow (-\frac{\sqrt{98}}{10})(-\frac{\sqrt{2}}{2}) - (\frac{\sqrt{2}}{10})(\frac{\sqrt{2}}{2}) = \frac{14-2}{20} = \frac{12}{20}$
 ب) $\sin(\frac{13\pi}{4} + \alpha) = \sin(2\pi + \frac{5\pi}{4} + \alpha) = \sin \alpha \cos \frac{5\pi}{4} + \cos \alpha \sin \frac{5\pi}{4}$ $r = \sqrt{1^2 + 1^2} = \sqrt{2}$
 $\sin \frac{13\pi}{4} = -\sin \frac{5\pi}{4} = -\frac{\sqrt{2}}{2} \mid \cos \frac{13\pi}{4} = -\cos \frac{5\pi}{4} = -\frac{\sqrt{2}}{2} \mid \cos \alpha = \frac{1}{\sqrt{5}}, \sin \alpha = \frac{1}{\sqrt{5}}$
 $\sin \alpha \cos \frac{5\pi}{4} + \cos \alpha \sin \frac{5\pi}{4} = (-\frac{\sqrt{2}}{2})(\frac{\sqrt{2}}{10} + \frac{\sqrt{2}}{10}) = -\frac{\sqrt{2}}{2} \times \frac{2\sqrt{2}}{10} = -\frac{2}{10} = -0.2$

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

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

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

