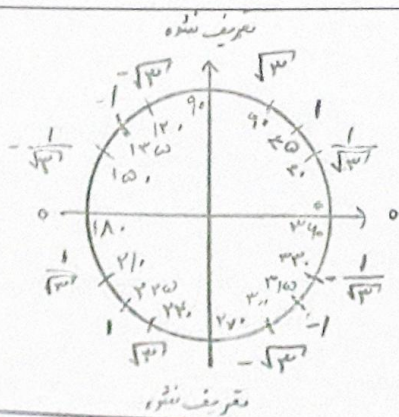
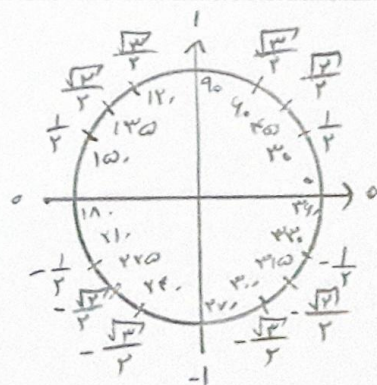
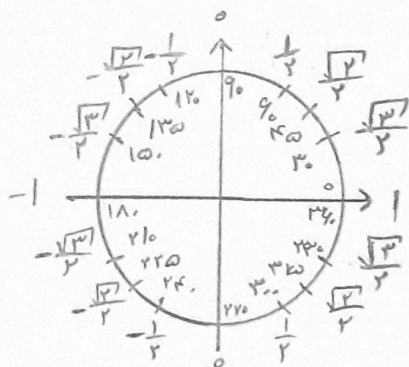
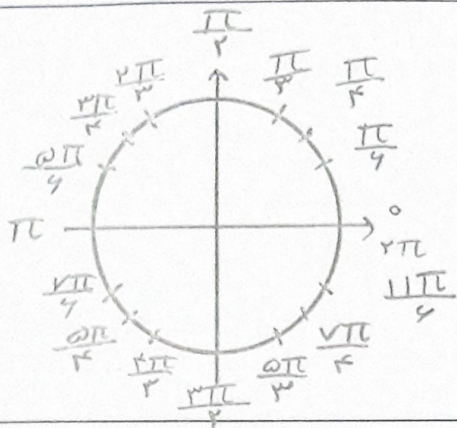
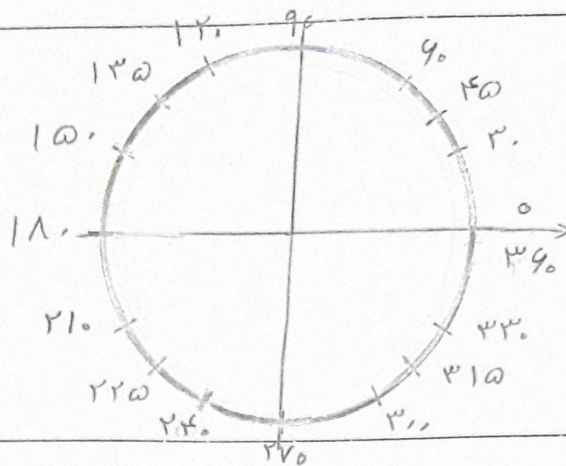
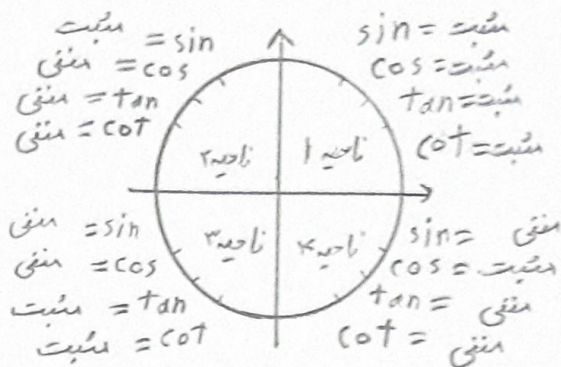
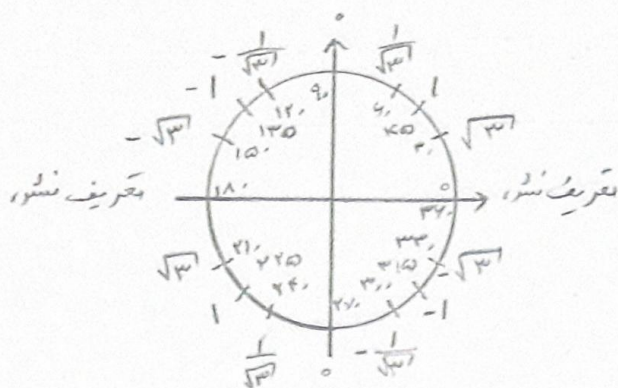






الف:  $12^\circ = \left| \frac{-\frac{1}{2}}{\frac{\sqrt{3}}{2}} \right|$   $9^\circ = \left| \frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}} \right| \Rightarrow \sin 12^\circ = \sin 9^\circ$

ب:  $150^\circ = \left| -\frac{\sqrt{3}}{2} \right|$   $21^\circ = \left| -\frac{\sqrt{3}}{2} \right| \Rightarrow \cos 150^\circ = \cos 21^\circ$

ج:  $\tan 33^\circ = -\frac{1}{\sqrt{3}}$   $\tan 15^\circ = -\frac{1}{\sqrt{3}} \Rightarrow \tan 33^\circ = \tan 15^\circ$

د:  $\cot 135^\circ = -1$   $\cot 215^\circ = -1 \Rightarrow \cot 135^\circ = \cot 215^\circ$

الف)  $\frac{2\pi}{3} = 120^\circ \rightarrow \cos 120^\circ = -\frac{1}{2}$   $\frac{1}{2}$  قرينة

$\sin 150^\circ = \sin 30^\circ = \frac{1}{2}$   
 $150^\circ = \frac{5\pi}{6}$   $30^\circ = \frac{\pi}{6}$

ب)  $\frac{11\pi}{9} = 220^\circ \rightarrow \cos 220^\circ = -\frac{\sqrt{3}}{2}$   $\frac{\sqrt{3}}{2}$  قرينة

$\sin 240^\circ = \sin 60^\circ = \frac{\sqrt{3}}{2}$   
 $240^\circ = \frac{4\pi}{3}$   $60^\circ = \frac{\pi}{3}$

الف)  $\frac{7\pi}{4} = 315^\circ \rightarrow \cot 315^\circ = -1$

$\cos 180^\circ = -1$

ب)  $\cos 150^\circ = -\frac{\sqrt{3}}{2}$   $\frac{\sqrt{3}}{2}$  قرينة

$\sin 40^\circ = \sin 140^\circ = \frac{\sqrt{3}}{2}$