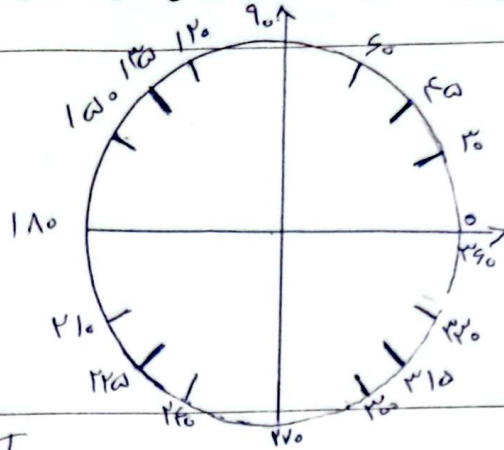
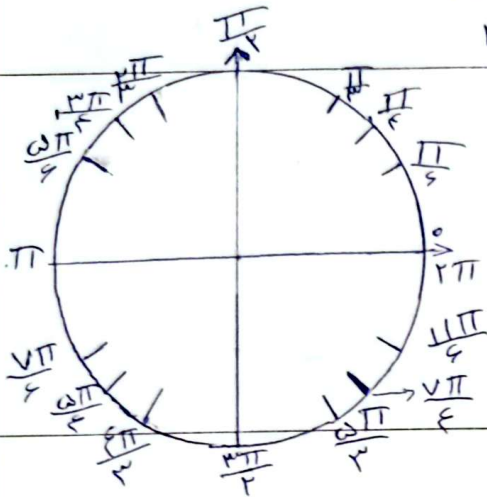




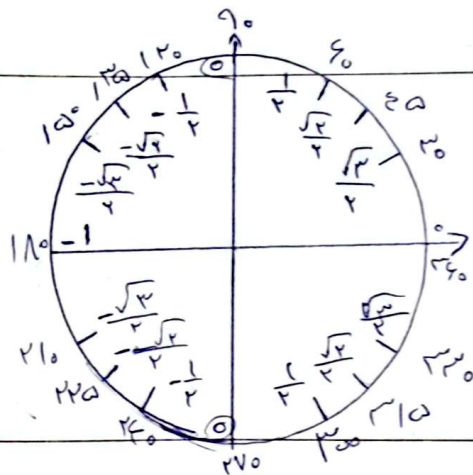
1



مسئله ۱: شعاع دایره = ۲
 $2\pi r = 2\pi \times 2 = 4\pi$
 $2\pi = \pi$

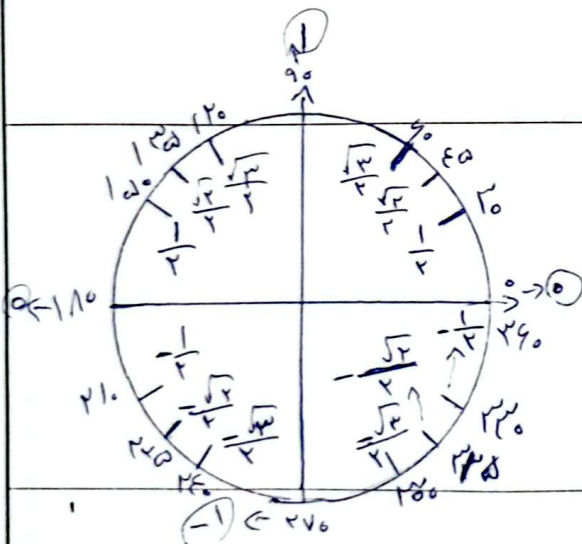
مسئله ۲: شعاع دایره = ۲
 $2\pi r = 2\pi \times 2 = 4\pi$
 $2\pi = \pi$

۲



۳

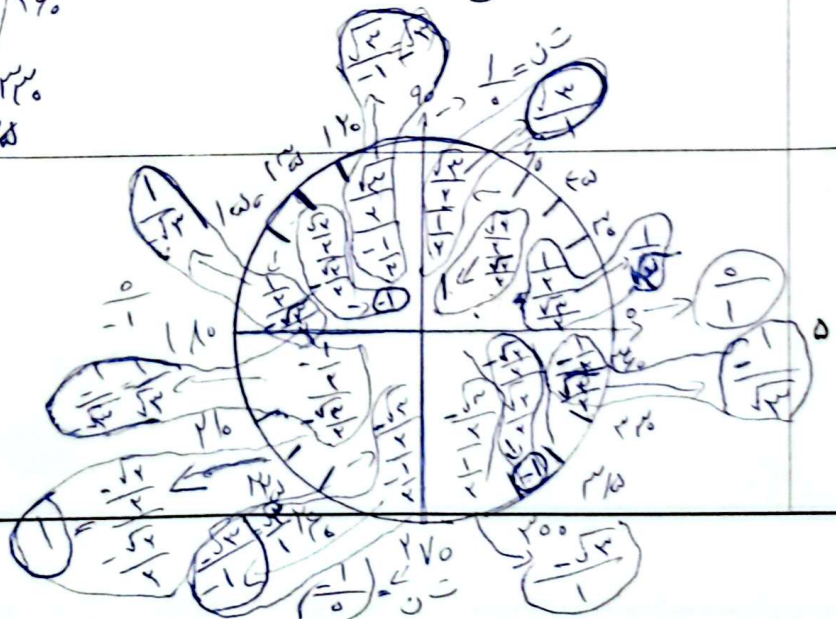
$$\cos = r$$

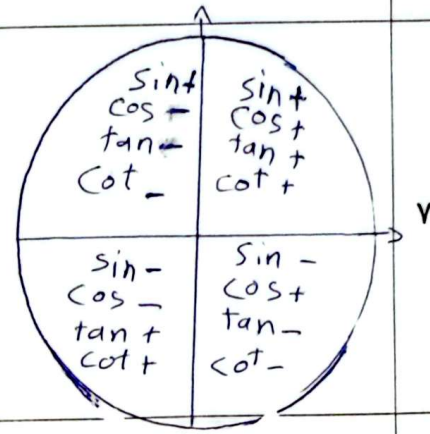
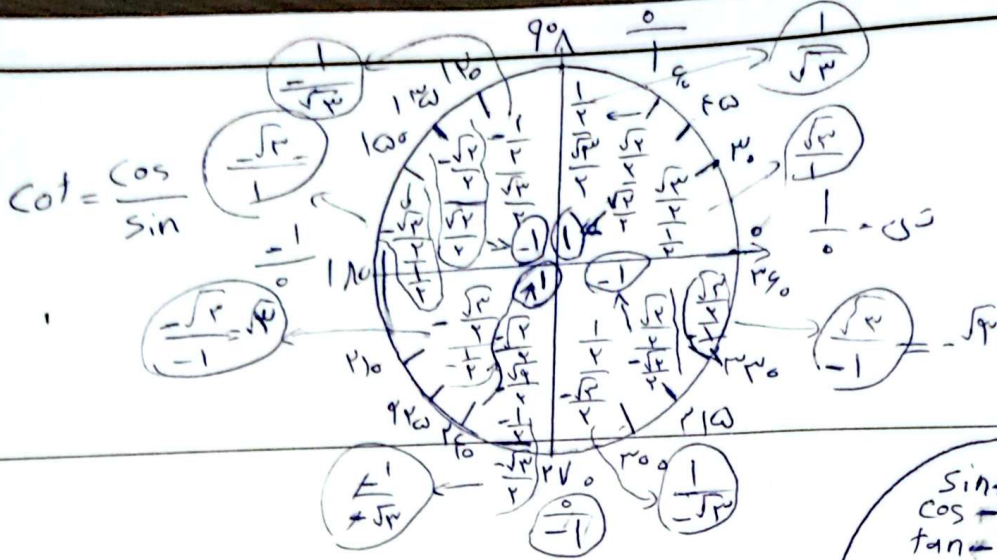


$$\sin = y$$

۴

$$\tan = \frac{\sin}{\cos}$$





الف) $\sin 120^\circ = \frac{\sqrt{3}}{2} = \sin 60^\circ = \frac{\sqrt{3}}{2}$

ب) $\cos 150^\circ = -\frac{\sqrt{3}}{2} = \cos 110^\circ = -\frac{\sqrt{3}}{2}$

ج) $\tan 120^\circ = \frac{\sin 120^\circ}{\cos 120^\circ} = \frac{\frac{\sqrt{3}}{2}}{-\frac{1}{2}} = -\frac{\sqrt{3}}{1} = -\tan 60^\circ$

د) $\cot 120^\circ = \frac{\cos 120^\circ}{\sin 120^\circ} = \frac{-\frac{1}{2}}{\frac{\sqrt{3}}{2}} = -\frac{1}{\sqrt{3}} = -\cot 60^\circ$

هـ) $\cos \frac{2\pi}{3} = -\frac{1}{2} \xrightarrow{\text{قرينة}} \frac{1}{2} \Rightarrow \sin 30^\circ, \sin 150^\circ = \frac{\pi}{6}, \frac{5\pi}{6}$

و) $\cos \frac{4\pi}{3} = -\frac{1}{2} \xrightarrow{\text{قرينة}} -\frac{\sqrt{3}}{2} \Rightarrow \sin 240^\circ, \sin 300^\circ = \frac{2\pi}{3}, \frac{4\pi}{3}$

ز) $\cot \frac{7\pi}{6} = \frac{\cos \frac{7\pi}{6}}{\sin \frac{7\pi}{6}} = \frac{-\frac{\sqrt{3}}{2}}{-\frac{1}{2}} = \sqrt{3} = \cot 30^\circ$

ح) $\cos 150^\circ = -\frac{\sqrt{3}}{2} \xrightarrow{\text{قرينة}} \frac{\sqrt{3}}{2} \Rightarrow \sin 120^\circ, \sin 60^\circ$