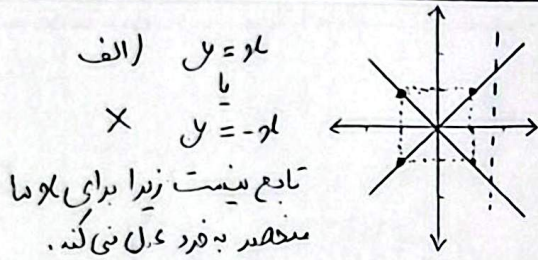


$$4a = a^2 + 3$$

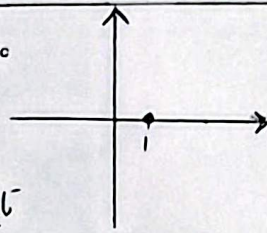
$$a^2 - 4a + 3 = 0$$

$$(a-1)(a-3) = 0 \rightarrow a \in [1, 3]$$

1



ب) $\sqrt{x-1} + \sqrt{x-1} = 0$
 $\sqrt{x-1} = 0 \rightarrow x-1=0 \rightarrow x=1$
 $\times$ تابع نیست چون فقط نقطه $(1,0)$ را دارد.



2

الف) $|y-1| = \sqrt{3-2y} \rightarrow |y-1| = 1$
 $y = 2, 0$
 $\times$ تابع نیست

ب) $y^5 = 0 \rightarrow y = 0$
 $y(y^4-1) = 0$
 $y \in \{0, 1, -1\}$
 $\times$ تابع نیست

ج) $\sin^2 x + \cos^2 \frac{x}{2} = 1$

$\frac{x}{4} \rightarrow \frac{1}{4} + \cos^2 \frac{x}{4} = 1$
 $\cos^2 \frac{x}{4} = \frac{3}{4}$
 $\cos \frac{x}{4} = \pm \frac{\sqrt{3}}{2}$
 $\cos y = \pm 1 \rightarrow y = 0, \pi, 2\pi, \dots$
 $\times$ تابع نیست

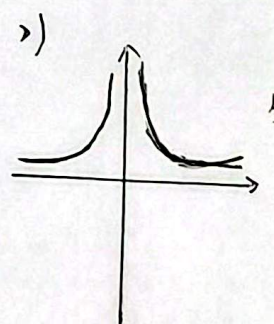
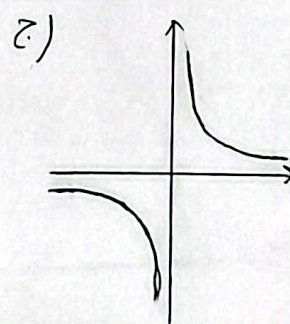
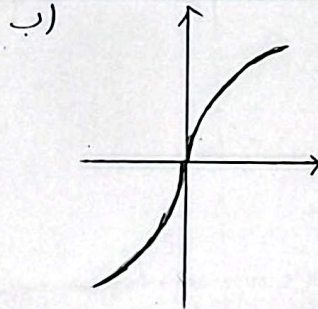
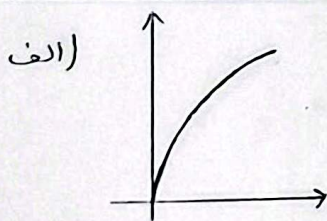
3

د) $2xy = x \rightarrow x=0 \rightarrow y \in \mathbb{R}$
 $\times$ تابع نیست

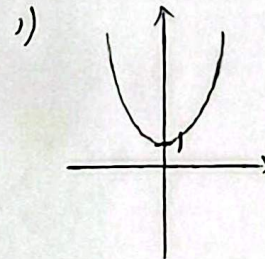
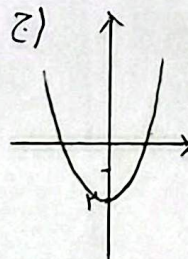
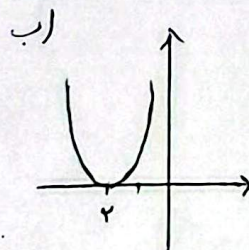
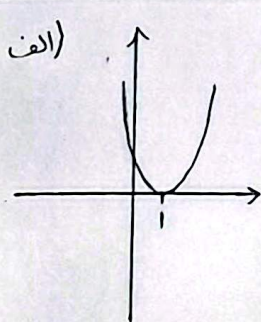
الف) $|y-1| = 4x - x^2$
 $x=1 \rightarrow |y-1| = 3$
 $y-1 = \pm 3 \rightarrow y \in \{4, -2\}$
 $\times$ تابع نیست

ب) $y^5 + 3x^2 = 0$
 $y^5 = -3x^2$
 $y = \sqrt[5]{-3x^2}$
 تابع است.

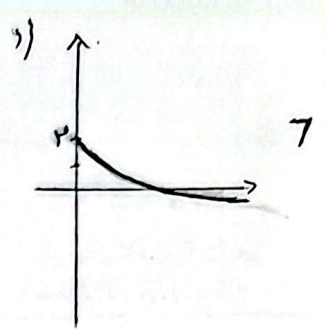
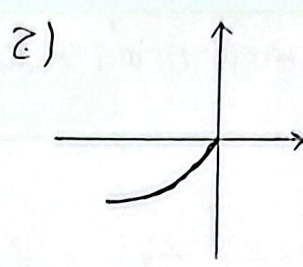
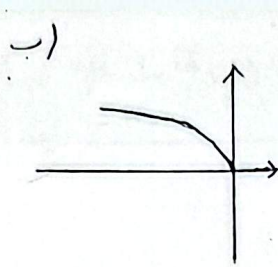
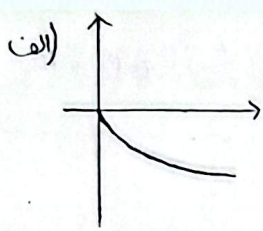
4



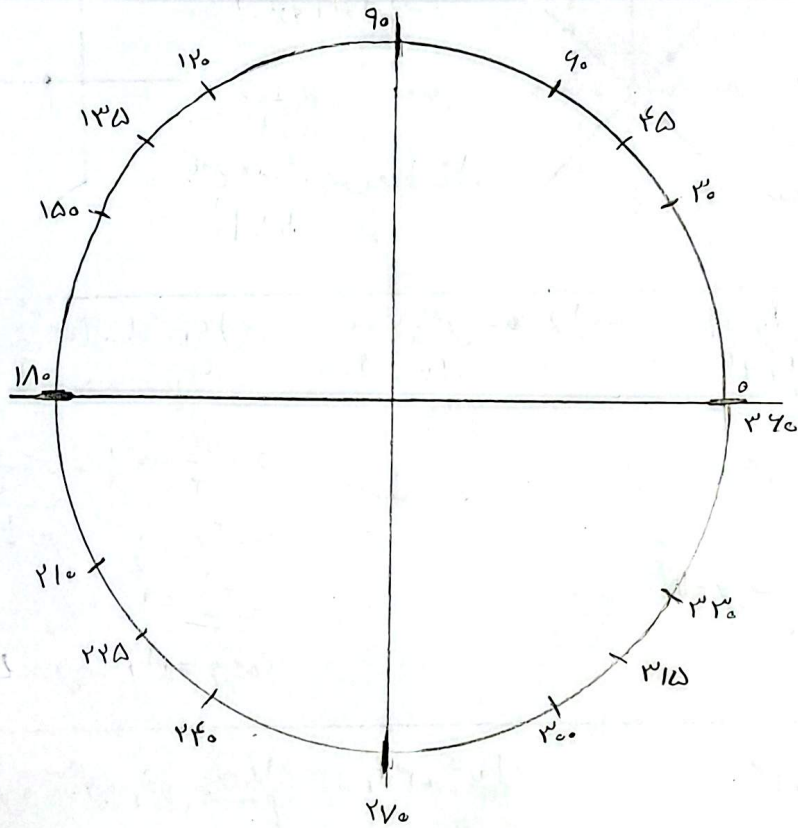
5



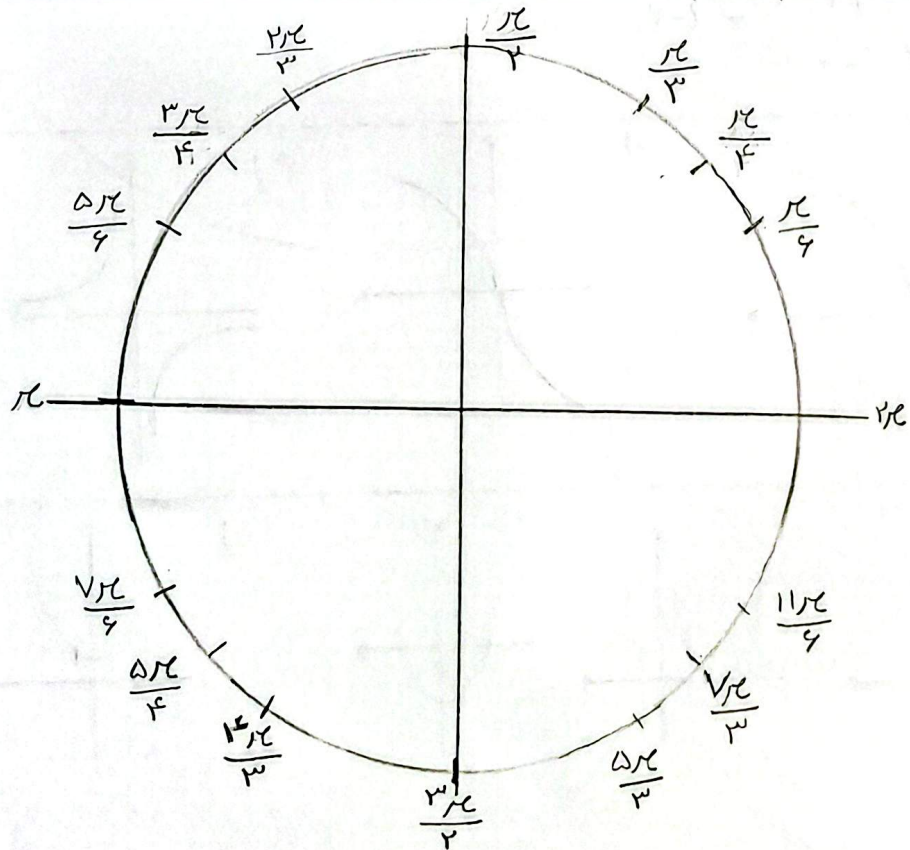
6



7



8



9

$$\text{الف) } \cos 120^\circ = -\frac{1}{2} \quad \left| \begin{array}{c} -\frac{1}{2} \\ \frac{\sqrt{3}}{2} \end{array} \right|$$

$$\text{ب) } \sin 150^\circ = \frac{1}{2} \quad \left| \begin{array}{c} \frac{\sqrt{3}}{2} \\ -\frac{1}{2} \end{array} \right|$$

$$\text{ج) } \cos \frac{5\pi}{3} = \frac{1}{2} \quad \left| \begin{array}{c} -\frac{1}{2} \\ \frac{\sqrt{3}}{2} \end{array} \right|$$

$$\text{د) } \sin \frac{11\pi}{6} = -\frac{1}{2} \quad \left| \begin{array}{c} \frac{\sqrt{3}}{2} \\ -\frac{1}{2} \end{array} \right|$$