

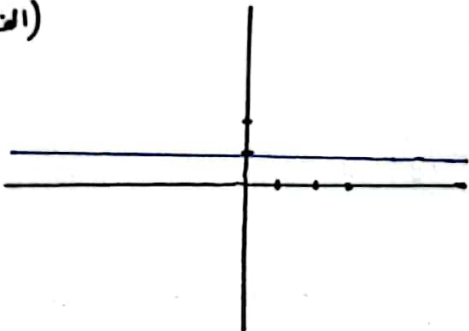
الف) $y^2 - 2x = 2x^2 \Rightarrow y^2 = 2x^2 + x$ $\left\{ \begin{array}{l} x_1 = x_2 \\ y_1^2 = 2x_1^2 + x_1 \\ y_2^2 = 2x_2^2 + x_2 \end{array} \right\} \Rightarrow y_1^2 = y_2^2 \Rightarrow y_1 = y_2$
تابع است

ب) $|y| + x^2 = x + 3 \xrightarrow{x=0} |y| = 3 \Rightarrow y = \pm 3$
تابع نیست تابع است

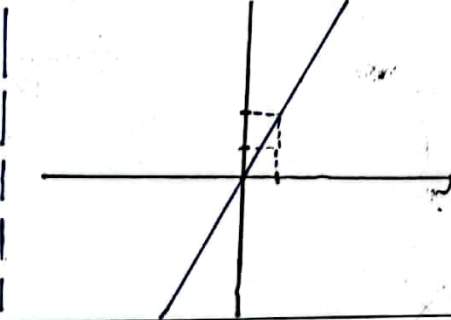
ج) $\sqrt{x-4} + \sqrt{y-2} = 0 \Rightarrow \begin{cases} \sqrt{x-4} = 0 \Rightarrow x = 4 \\ |y-2| = 0 \Rightarrow y = 2 \end{cases}$
تابع است

د) $x = \cos y \xrightarrow{x=\frac{1}{2}} y = \{2k\pi \pm \frac{\pi}{3} | k \in \mathbb{Z}\}$
تابع نیست

الف)



ب)



الف) $y = ax + b = x \Rightarrow$
 $a = 1$
 $b = 0$

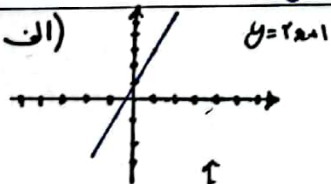
$a + 2b = 1 + 0 = 1$

ب) $y = x^2, ax + b \quad a = a^2 - 4b = 1 - 4b = -4 \Rightarrow b = 5$

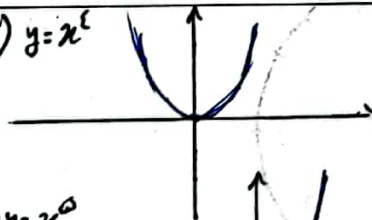
$\min = \left| \frac{-b}{2a} \right| = \left| \frac{-5}{2} \right| = \frac{5}{2} \Rightarrow \begin{cases} \frac{-a}{4} = \frac{5}{2} \Rightarrow a = -10 \\ \frac{-a}{4} = \frac{5}{2} \Rightarrow a = -10 \end{cases}$

$a + 2b = -10 + 10 = 0$

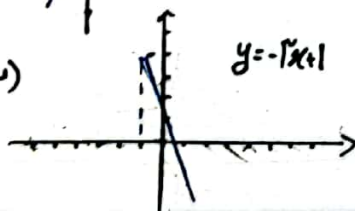
الف)



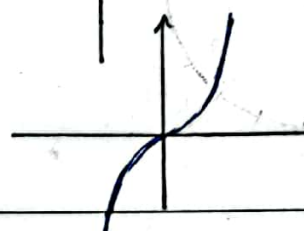
ج) $y = x^2$



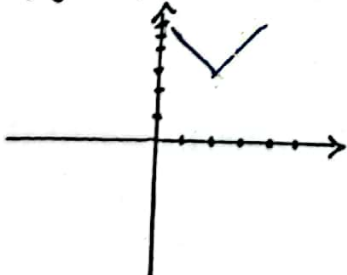
ب)



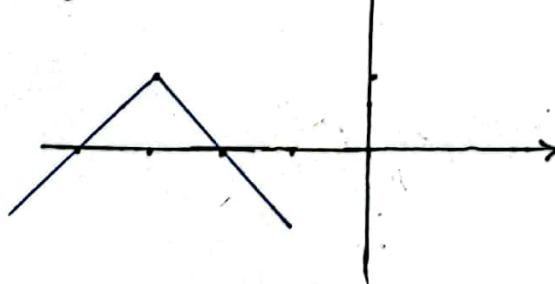
د) $y = x^3$

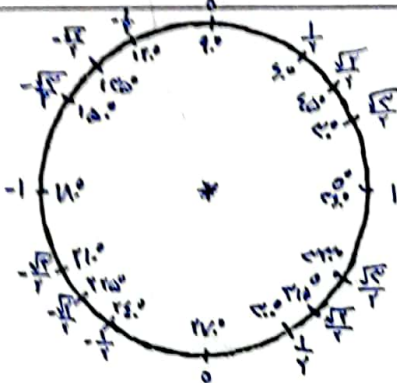
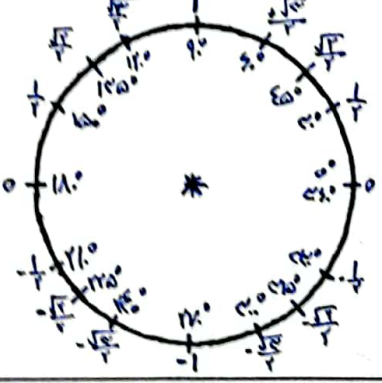


الف) $y = |x - 2| + 3$



ب) $y = -|x + 4| + 1$



الف) $y = \frac{x+1}{x^2-1}$ $x^2-1 \neq 0 \Rightarrow x \neq \pm 1$ $D_f = \mathbb{R} - \{1, -1\}$ ب) $y = \frac{x+1}{x^2(x+1)}$ $x \neq 0, -1$ $D_f = \mathbb{R} - \{0, -1\}$ ج) $y = \frac{x+1}{x^2(x+1)}$ $x \neq 0, -1$ $D_f = \mathbb{R}$	د) $y = \frac{x+1}{x^2-1}$ $x^2-1 \neq 0 \Rightarrow x \neq \pm 1$ $D_f = \mathbb{R} - \{1, -1\}$	6
الف) $y = \sqrt{x-1} + \sqrt{x+2}$ $x-1 \geq 0 \Rightarrow x \geq 1$ $x+2 \geq 0 \Rightarrow x \geq -2$ $x \geq 1$ $D_f = [1, \infty)$ ب) $y = \frac{x+1}{x+1}$ $x \neq -1$ $D_f = \mathbb{R}$	ج) $y = \frac{\sqrt{x-2}}{x-1}$ $x-2 \geq 0 \Rightarrow x \geq 2$ $x \neq 1$ $D_f = [2, \infty) - \{1\}$ د) $y = \frac{x+1}{ x +x^2}$ $x \neq 0$ $D_f = \mathbb{R} - \{0\}$	7
	کسینوس ها	8
	سینوس ها	9
الف) $\{rk\pi \pm \frac{\pi}{3} \mid k \in \mathbb{Z}\}$ ب) $\{rk\pi + \frac{\pi}{2}, rk\pi + \frac{3\pi}{2} \mid k \in \mathbb{Z}\}$		10