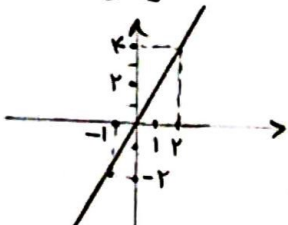
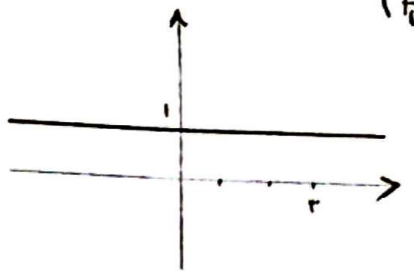
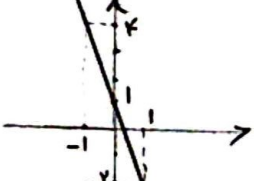
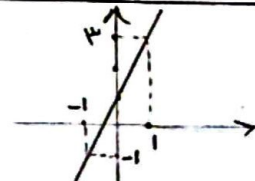
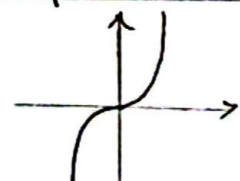
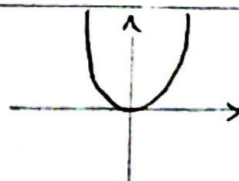
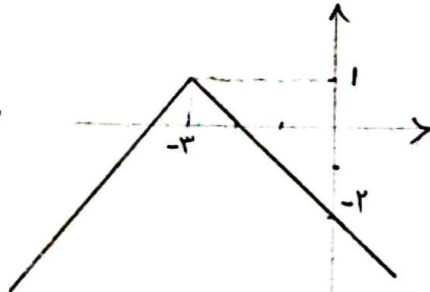
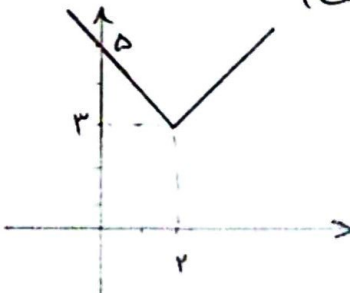
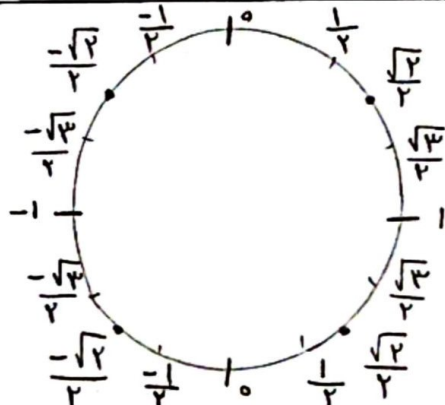
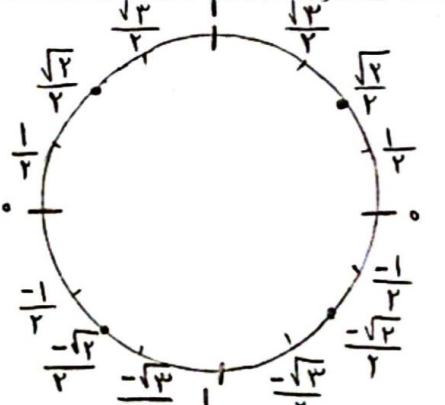


ب) $y + x^2 = x + 3 \xrightarrow{x=0} y = 3$ $\Rightarrow y = \pm 3$ تابع نیست	الف) تابع هست ✓ $y^3 - x = 2x^2$ $\begin{cases} y_1^3 = 2x_1^2 + x_1 \\ y_2^3 = 2x_2^2 + x_2 \end{cases} \xrightarrow{x_1=x_2} y_1^3 = y_2^3$ $\Rightarrow y_1 = y_2$	د) $x = \cos y \xrightarrow{x=1} y = 0, 2\pi, 4\pi, 6\pi, \dots$ تابع نیست ✗	ج) تابع یک نقطه ✓ $\sqrt{x-4} + y-2 = 0$ $\sqrt{x-4} = 0 \Rightarrow x=4$ $y-2 = 0 \Rightarrow y=2$ تابع هست ✓	ب) شیب (۲) $y = ax + b \rightarrow y = 2x + b$ $\frac{1}{2} \rightarrow 2 = 2x(1) + b \rightarrow b = 0$ $\Rightarrow y = 2x$ 	الف) $y = k \xrightarrow{ \frac{1}{2} } y = 1$ $(f(x) = 1)$ 	ب) $\text{ext} \rightarrow \frac{-b}{2a} = 2 \rightarrow \frac{-b}{2} = 2 \rightarrow b = -4$ $\Rightarrow y = x^2 - 4x + b$ $\text{ext} \rightarrow \frac{-\Delta}{4a} = \frac{-14 + 4c}{4} = 1 \rightarrow c = 5$ $\Rightarrow y = x^2 - 4x + 5$ $a + 2b \rightarrow -4 + 2 \times 5 = 6$	الف) تابع همانی $y = x$ $y = ax + b \rightarrow y = x$ $a = 1, b = 0$ $a + 2b \rightarrow 1 + 2 \times 0 = 1$	ب) $y = -2x + 1$ $\frac{1}{-2}, \frac{0}{1}, \frac{-1}{4}$ 	الف) $y = 2x + 1$ $\frac{1}{2}, \frac{0}{1}, \frac{-1}{-1}$ 	د) $y = x^5$ $(y = x^{\text{فرد}})$ 	ج) $y = x^4$ $(y = x^{\text{زوج}})$ 	ب) $y = - x+3 + 1$  تابع ۳ تا به چپ و ۱ تا به بالا می رود و نسبت به محور لاها قرینه می شود	الف) $y = x-2 + 3$  تابع ۲ تا به راست و ۳ تا به بالا می رود
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ب) $y = \frac{x+4}{x^2-7x+14} \rightarrow x^2-7x+14 \neq 0$ $\Delta = 49 - 4(14) = -15$ / $D_f = \mathbb{R}$ فاقد ریشه حقیقی ج) $y = \frac{x+4}{x^2-4x^2} \rightarrow x^2-4x^2 \neq 0$ $\rightarrow x^2(x^2-4) \neq 0$ $x \neq 0, 2, -2$ / $D_f = \mathbb{R} - \{-2, 0, 2\}$	الف) $y = \frac{x+4}{x^2-4x} \rightarrow x^2-4x \neq 0$ $x(x-4) \neq 0 \rightarrow x \neq 0, 4$ / $D_f = \mathbb{R} - \{0, 4\}$ ج) $y = \frac{x+4}{x^2+x+4} \rightarrow x^2+x+4 \neq 0$ $\Delta = 1 - 4(4) = -15$ / $D_f = \mathbb{R}$ فاقد ریشه حقیقی	۶
ب) $y = \frac{3x+1}{x^2+1} \rightarrow x^2+1 \neq 0 \rightarrow x^2 \neq -1$ همیشه مثبت $D_f = \mathbb{R}$ ج) $y = \frac{2x+3}{ x +x^2} \rightarrow x +x^2 \neq 0 \rightarrow x \neq 0$ نامنفی $D_f = \mathbb{R} - \{0\}$	الف) $y = \sqrt{4-x} + \sqrt{x-2}$ $4-x \geq 0 \rightarrow x \leq 4$ $x-2 \geq 0 \rightarrow x \geq 2$ } $2 \leq x \leq 4$ $D_f = [2, 4]$ ج) $y = \frac{\sqrt{x-2}}{x-4} \rightarrow x-2 \geq 0$ $x-4 \neq 0 \rightarrow x \neq 4$ $x \geq 2$ $x \neq 4$ } $D_f = [2, +\infty) - \{4\}$	۷
$1, \frac{\sqrt{3}}{2}, \frac{\sqrt{2}}{2}, \frac{1}{2}, 0$ $-\frac{1}{2}, -\frac{\sqrt{2}}{2}, -\frac{\sqrt{3}}{2}, -1$ $-\frac{\sqrt{3}}{2}, -\frac{\sqrt{2}}{2}, -\frac{1}{2}, 0$ $\frac{1}{2}, \frac{\sqrt{2}}{2}, \frac{\sqrt{3}}{2}$		۸
$0, \frac{1}{2}, \frac{\sqrt{2}}{2}, \frac{\sqrt{3}}{2}, 1$ $\frac{\sqrt{3}}{2}, \frac{\sqrt{2}}{2}, \frac{1}{2}, 0, -\frac{1}{2}$ $-\frac{\sqrt{2}}{2}, -\frac{\sqrt{3}}{2}, -1, -\frac{\sqrt{3}}{2}$ $-\frac{\sqrt{2}}{2}, -\frac{1}{2}$		۹
ب) $\frac{11\pi}{4} \rightarrow 330^\circ \rightarrow \cos(330^\circ) = \frac{\sqrt{3}}{2}$ قرینه $\rightarrow -\frac{\sqrt{3}}{2} \rightarrow \sin \rightarrow (240^\circ, 300^\circ)$ $\rightarrow (\frac{4\pi}{3}, \frac{5\pi}{3}, \frac{10\pi}{3}, \frac{11\pi}{3})$ $\rightarrow (2k\pi - \frac{\pi}{3}, 2k\pi - \frac{2\pi}{3})$	الف) $\frac{2\pi}{3} \rightarrow 120^\circ \rightarrow \cos(120^\circ) = -\frac{1}{2}$ قرینه $\rightarrow \frac{1}{2} \rightarrow \sin \rightarrow (30^\circ, 150^\circ)$ $\rightarrow (\frac{\pi}{4}, \frac{5\pi}{4}, \frac{13\pi}{4}, \frac{17\pi}{4})$ $\rightarrow (2k\pi + \frac{\pi}{4}, 2k\pi + \frac{5\pi}{4})$	۱۰