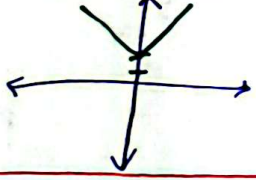
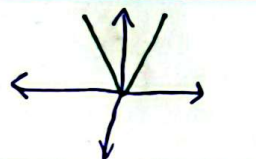
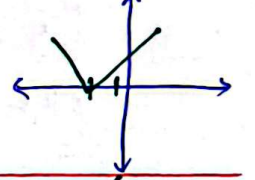
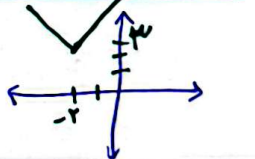
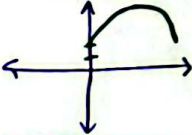
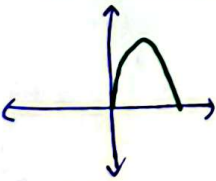
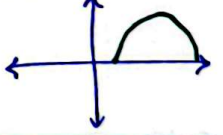
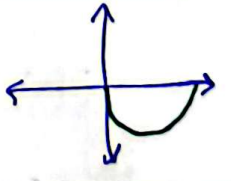
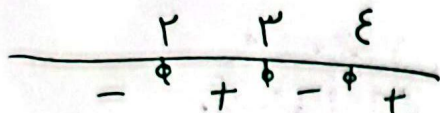
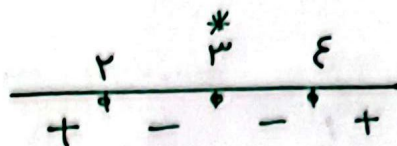


الف) $y^2 - x = 2x^2$ تابع است $\left. \begin{aligned} y_1^2 &= 2x^2 + x \\ y_2^2 &= 2x^2 + x \end{aligned} \right\} y_2^2 = y_1^2 \rightarrow y_1 = y_2$ ب) $y+2 + x^2 = x+3$ تابع نیست: مثال نقض $x=0 \rightarrow y = \pm 3$	ج) $\sqrt{x-4} + y-2 = 0$ تابع است حرفه صفر $\rightarrow y=2$ د) $x = \cos y$ مثال نقض اگر $x=0$ باشد آنگاه y می تواند $\frac{\pi}{2}$ و $\frac{3\pi}{2}$ باشد	۱
الف) $y = \frac{x+5}{x^2-4x}$ $x^2-4x \neq 0$ $x(x-4) \neq 0$ $\Rightarrow D_f = \mathbb{R} - \{0, 4\}$ ب) $y = \frac{x+5}{x^2-7x+12}$ خارج صفر نمی شود $\Rightarrow D_f = \mathbb{R}$	ج) $y = \frac{x+5}{x^2+x+6}$ $D_f = \mathbb{R}$ د) $y = \frac{x+5}{x^2-4x}$ $x^2(x-4) \neq 0$ $\Rightarrow D_f = \mathbb{R} - \{-2, 0, 2\}$	۲
الف) $\sqrt{4-x} + \sqrt{x-2}$ $\left. \begin{aligned} x &\leq 4 \\ x &\geq 2 \end{aligned} \right\} \Rightarrow D_f = [2, 4]$ ب) $y = \frac{2x+1}{x^2+1}$ (در علامت) خارج $D_f = \mathbb{R}$	ج) $\frac{\sqrt{x-2}}{x-4}$ ۱) $x-4 \neq 0$ $x \neq 4$ ۲) $x-2 \geq 0 \Rightarrow x \geq 2$ $D_f = [2, 4) \cup (4, \infty)$ د) $y = \frac{2x+3}{ x +x^2}$ $D_f = \mathbb{R} - \{0\}$	۳
الف) $y = x +2$  ب) $y = 2 x$ 	ج) $x+2$  د) $x+2 +3$ 	۴
الف) $f(x)+2$  ب) $2f(x)$ 	ج) $f(x-1)$  د) $-f(x)$ 	۵

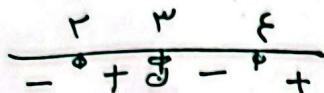
$$الف) y = (x-2)(x-3)(x-4)$$



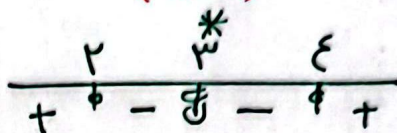
$$ب) y = (x-2)(x-3)^2(x-4)$$



$$الف) y = \frac{(x-2)(x-4)}{x-3}$$



$$ب) y = \frac{(x-2)(x-4)}{(x-3)^2}$$



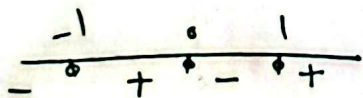
$$الف) y = \frac{x^3 - 3x + 2}{x-3}$$

جمع توان ای فرد و زوج
با هم برابر است پس
عبارت بر (x-1)
بخشیده

$$ب) y = \frac{x^2 - 3x + 2}{x^2 - 4x + 3} = \frac{(x-1)(x-2)}{(x-3)(x-1)}$$

$$الف) y = \frac{x^4 - x^2}{x^2 + x + 2} \rightarrow x^2(x^2 - 1) \rightarrow x = \{-1, 1\}$$

همواره مثبت



$$ب) y = \frac{x^2 + 3x + 4}{x^2 + 2x + 3}$$

همواره مثبت

همیشه مثبت است

$$الف) y = \sqrt{\frac{x^3 - 1}{x^3 - x}} \rightarrow x(x^2 - 1) \neq 0$$

$\Rightarrow x \neq \{-1, 1\}$

$$D_f = (-\infty, -1) \cup (0, 1) \cup (1, \infty)$$

$$ب) y = \sqrt{\frac{x^2 - 16}{x^2 - 4x + 4}} = \sqrt{\frac{x^2 - 16}{(x-1)(x-4)}}$$

$$D_f = (-\infty, -4] \cup (1, 4) \cup (4, \infty)$$