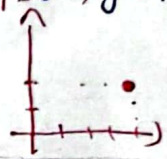


الف) $y^3 - x = 2x^2 \Rightarrow y^3 = 2x^2 + x \Rightarrow y_1^3 = 2x^2 + x$
 $y_2^3 = 2x^2 + x \Rightarrow y_1 = y_2 \Rightarrow y_1 = y_2$ تابع هست $\Rightarrow$ تعریف ریاضی

ب) $|y| + x^2 = x + 3, x=0 \Rightarrow |y| = 3 \Rightarrow y = \pm 3 \Rightarrow$ تابع نیست مثال نقض

ج) $\sqrt{x-4} + |y-2| = 0 \Rightarrow \sqrt{x-4} = 0 \Rightarrow x=4, |y-2|=0 \Rightarrow y=2$ جمع دو عدد همواره مثبت صفر شده $\Rightarrow$ بار رسم شکل

د) $x = \cos y, x = \sqrt{\frac{2}{y}} \Rightarrow y = 3.14, 4.5 \Rightarrow$ تابع نیست با مثال نقض



الف) $y = \frac{x+4}{x^2-4x} \Rightarrow x(x-4) \neq 0 \Rightarrow D_f = \mathbb{R} - \{0, 4\}$

ب) $y = \frac{x+1}{x^2-7x+12} \Rightarrow \Delta = b^2 - 4ac = (-7)^2 - 4 \cdot 1 \cdot 12 < 0 \Rightarrow$ هیچ وقت صفر نمی شود $\Rightarrow D_f = \mathbb{R}$

ج) $y = \frac{x+4}{x^2+x+4} \Rightarrow \Delta = 1^2 - 4 \cdot 1 \cdot 4 < 0 \Rightarrow$ هیچ وقت صفر نمی شود $\Rightarrow D_f = \mathbb{R}$

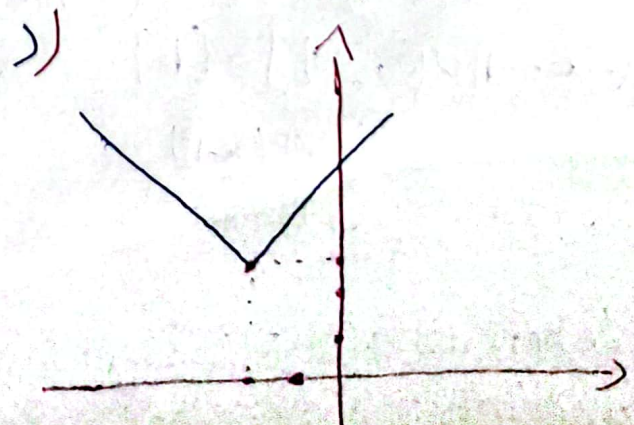
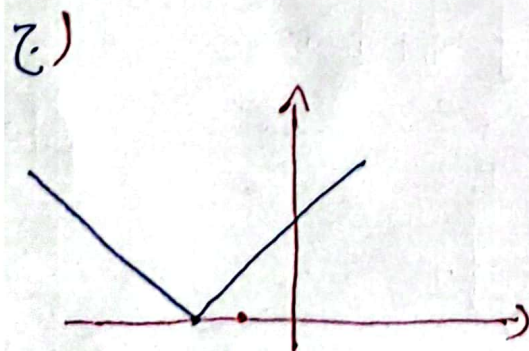
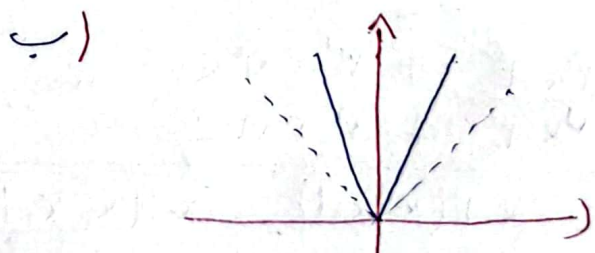
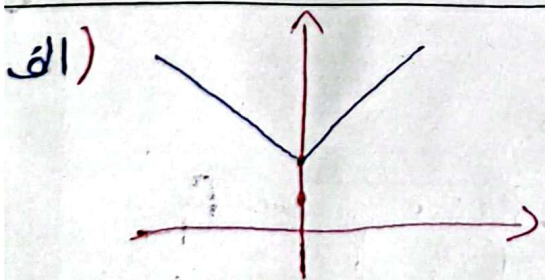
د) $y = \frac{x+4}{x^2-4x^2} \Rightarrow (x^2-2x)(x^2+2x) = x(x-2)(x+2) \Rightarrow D_f = \mathbb{R} - \{2, 0, -2\}$

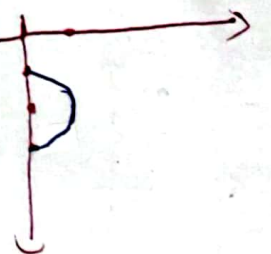
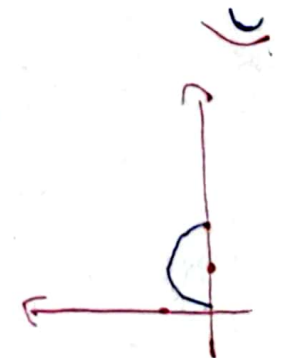
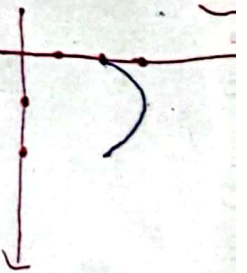
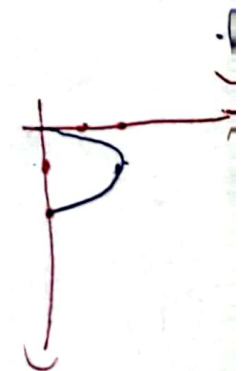
الف) $y = \sqrt{4-x} + \sqrt{x-2} \Rightarrow x \geq 2 \Rightarrow x \leq 4 \Rightarrow 2 \leq x \leq 4 \Rightarrow D_f = [2, 4]$

ب) $y = \frac{3x+1}{x^2+1} \Rightarrow$ همواره بزرگتر از صفر است $\Rightarrow D_f = \mathbb{R}$

ج) $y = \frac{\sqrt{x-2}}{x-4} \Rightarrow x \geq 2 \Rightarrow x \neq 4 \Rightarrow D_f = [2, +\infty] - \{4\}$

د) $y = \frac{2x+3}{|x|+x^2} \Rightarrow D_f = \mathbb{R} - \{0\}$





2. $y = \frac{(x-1)(x-2)(x-3)}{(x-4)(x-5)(x-6)}$

$\frac{(x-2)(x-1)}{x-2}$

$y = \frac{(x-1)(x-1)}{(x-2)^2}$

$$\text{ii)} \quad y = \frac{x^3 - 1}{x - 1} \quad x^3 - 1 = (x-1)(x^2 + x + 1) - 1^3(x-1) = (x-1)(x^2 + x - 1)$$

$$y = \frac{x^2 - 13x + 12}{x^2 - 15x + 36} = \frac{(x-1)(x-12)}{(x-3)(x-12)}$$

جاء $\frac{x^y - x^y}{x^y + x^y - 1} \Delta = 1^y - 1^y < 0$ هو ايجابي، س، ايجابي

ج) $y = \frac{x^1 + 13x^2 + 12}{x^4 + 9x^3 + 12} \rightarrow Q = x^1 - 15x^2 \leftarrow$ مع باقي 12

c) $\sqrt{\frac{x^2-1}{x^2-x}} = \sqrt{\frac{(x-1)(x+1)}{x(x-1)}} = \sqrt{\frac{(x+1)}{x}}$ → $\Delta = 1^2 - 4 \cdot 1 \cdot (-)$

$y < \frac{x^2-1}{x^2-x}$

$D_f = [-\infty, -1] \cup [0, \infty] - \{1\}$

+ +
- | 0
+ - + +

Werte ablesen

$$= \sqrt{\frac{(x+1)(x-1)}{(x-1)(x-1)}}$$

$$Df = [(-\infty, -\frac{1}{2}) \cup (1, \infty)] - \{\frac{1}{2}\}$$

