

①

بیشترین مقدار
(الف) $x \rightarrow \infty, y \rightarrow 1$
غیر متغیر می شود
 $x=1, y=-\frac{1}{2}$ کمترین مقدار

$$D = (-\infty, -\frac{1}{2}] \cup (1, +\infty)$$

(ب) $\frac{x^2+1}{|x|} \leq |x| + \frac{1}{|x|} \Rightarrow |x| \geq 1 \Rightarrow D = [1, +\infty)$

②

$$x^2 + (1-y)x - y = 0$$

$$x = \frac{y-1 \pm \sqrt{y^2+1y+1}}{2}$$

$$\Rightarrow y^2+1y+1 \geq 0$$

$$\Rightarrow (y+1)(y+1) \geq 0 \Rightarrow \frac{y+1}{y+1} \geq 0$$

$$D = (-\infty, -1] \cup [-1, +\infty)$$

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

$$\Rightarrow x = t$$

$$\frac{t^2}{t^2 + \frac{1}{t^2}}$$

$$t \rightarrow \infty, y=1$$

$$t \rightarrow 0, y=0$$

غیر متغیر می شود

$$D = [0, 1)$$

③

(الف) $y = \sqrt{-x^2+4x+1} \Rightarrow -\frac{4}{x} \leq 0 \Rightarrow x \geq 1, y \leq 2$

$$\sqrt{(-\infty, 2]} = [0, \sqrt{2}]$$

(ب) $y = \sqrt{x^2+4x+1}$

$$\frac{1}{x} \leq 2 \Rightarrow x \geq -1, y \leq -1$$

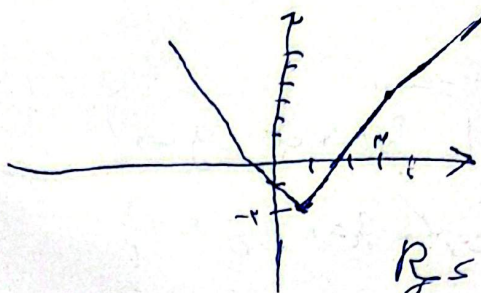
$$\Rightarrow \sqrt{(-1, +\infty)} \Rightarrow D = [-1, +\infty)$$

④

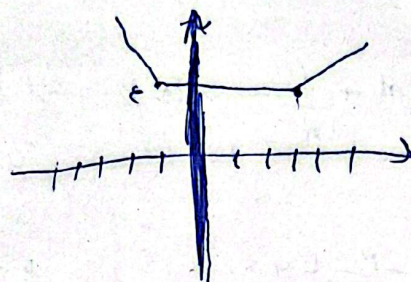
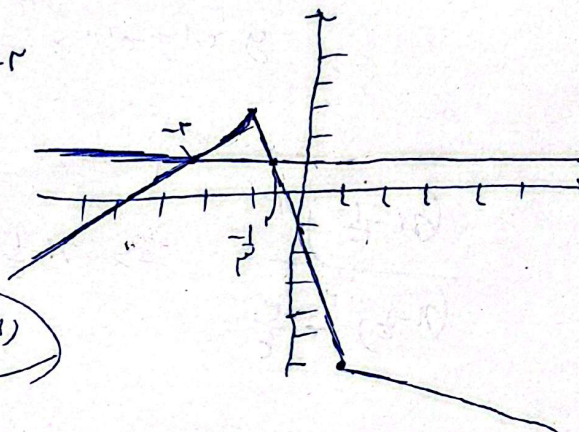
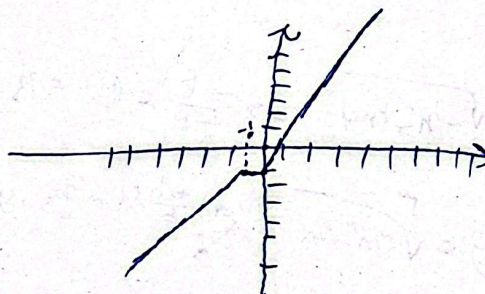
(الف)

$$x^2 - x + 1 \Rightarrow D \leq 10 \Rightarrow \log(-\infty, +\infty) \Rightarrow D \leq 10$$

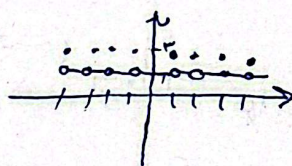
(ب) $\log x \cdot \log x \cdot \log x \cdot \log x \Rightarrow D = [1, +\infty)$
 $\log x \cdot \log x \cdot \log x \cdot \log x \Rightarrow D = [1, +\infty)$

$$\frac{1}{n-1} \left(\frac{n-1}{n-2} - \frac{n-1}{n-1} + \frac{n-1}{n+1} \right)$$

$$R_f \leq [-5000)$$

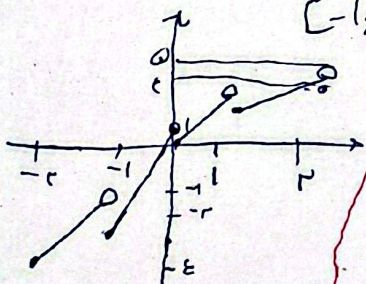
تابع گلوئی


$$Q = [e_1, e_2]$$
$$\begin{array}{c|c|c} & -1 & r \\ \hline r & r_{n-1} & r_{n-2} \\ r_{n-1} & r_{n-2} & r_{n-3} \\ r_{n-2} & r_{n-3} & r_{n-4} \end{array}$$

$$(-\infty, -\frac{1}{e}] \cup [-\frac{1}{e}, +\infty)$$
$$\frac{-1}{\epsilon} \cdot$$

$$R \leq 11$$

الف) $[n] \in [-n] \in \mathbb{N}$


$$R = \{ \omega \}$$

$\downarrow$
 $[-1, -1) \Rightarrow \psi_{n+1} \quad [0, 1) \Rightarrow \psi_n$
 $[-1, 0) \Rightarrow \psi_{n+1} \quad [1, 2) \Rightarrow \psi_{n-1} \quad \{1\} \Rightarrow \psi_{n+1}$


$$R = \frac{1}{2} [-\infty, \infty)$$
$$\Rightarrow \mathcal{F} = \left\{ \frac{2}{\sqrt{3}}, \sqrt{3} \right\}$$

(الف) $\frac{m}{m+1} \rightarrow \frac{1}{1+\frac{1}{m}}$
 $\frac{m}{m+1} \rightarrow \frac{1}{1+\frac{1}{m}}$
 $\frac{1}{1+\frac{1}{m}} \rightarrow \frac{1}{1+\frac{1}{m}}$

$\max_i r_i \rightarrow 3$
 $\min_i r_i \rightarrow 1$
 $\frac{b}{n} = \frac{1}{2} \approx 0.5$