

$a = \begin{cases} ay - 1 & y > 1 \\ -y^2 & y < 1 \end{cases} \rightarrow \frac{a+1}{e} = y \rightarrow \frac{a+1}{e} > 1 \rightarrow a > e-1$
 $\frac{a+1}{e} < 1 \rightarrow a < e-1$
 $y = \sqrt{-a} \rightarrow \sqrt{-a} > 1 \rightarrow a < -1$
 $D_f = (-\infty, -1) \cup (e-1, \infty)$

$f(x) \leq 0 \rightarrow x \in (-\infty, -2] \cup [2, \infty)$

$f(x) = x^2 - 4x + 4 = (x-2)^2$
 $f(x) \leq 0 \rightarrow (x-2)^2 \leq 0 \rightarrow x = 2$
 $D_f = \{2\}$

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

$\Delta = 4 - 4 = 0 \rightarrow x = 1$
 $f(x) = \frac{x^2 - 2x + 2}{x^2 - 2x} = \frac{(x-1)^2 + 1}{(x-1)^2}$
 $f(x) \leq 0 \rightarrow \frac{(x-1)^2 + 1}{(x-1)^2} \leq 0$
 $D_f = \emptyset$

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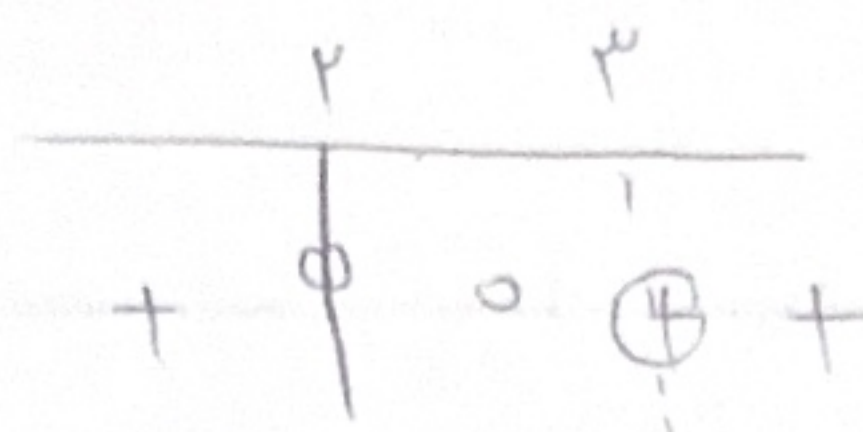
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$$a) y = \sqrt{(n-r)[n-r]} \geq 0$$

$$\left(\frac{[n]-r}{r, r \leq n} \right)$$

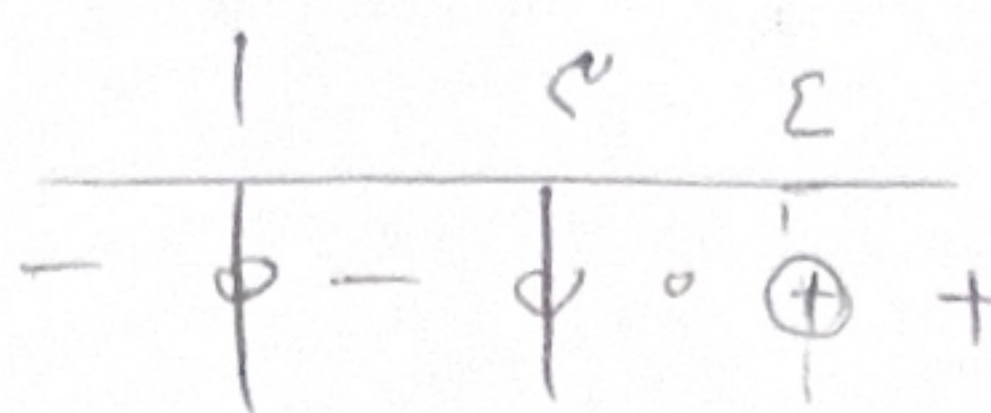


$$D_f \subseteq \mathbb{R} \checkmark$$

(r) - 4

$$b) y = \sqrt{|n-1|[n-c]} \geq 0$$

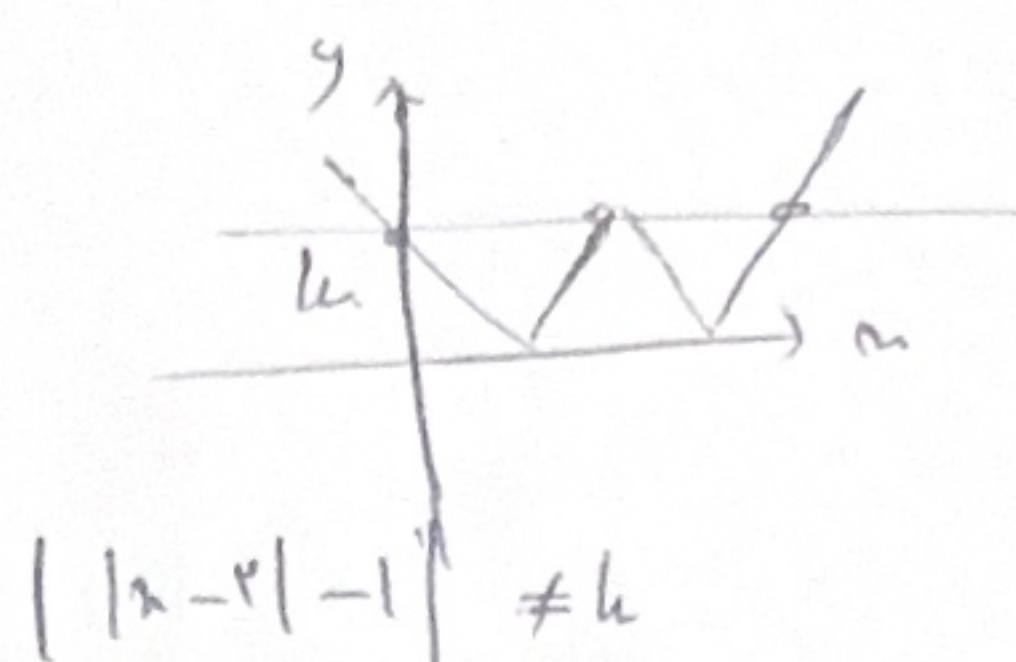
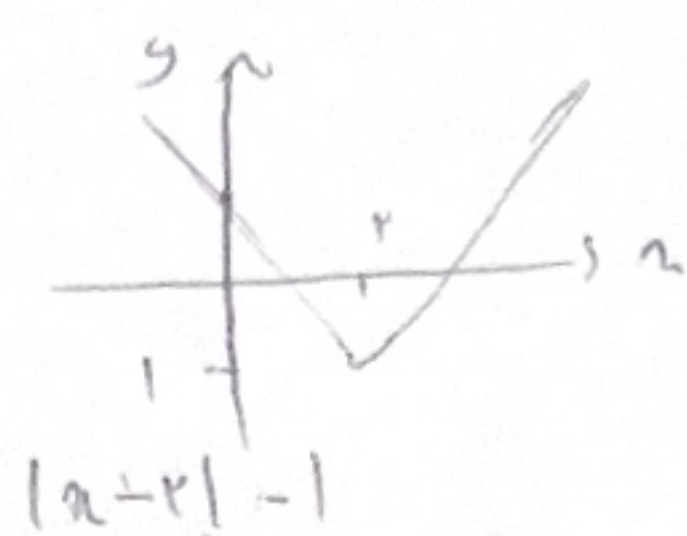
$$\left(\frac{[n]-c}{n \leq 1, c \leq n \leq c} \right)$$



$$D_f = [c, \infty) \cup \{1\} \checkmark$$

$$|n-r|-1-k \neq 0$$

$$|n-r|-1=k$$



$$|k=1| \checkmark$$

(r) - V

$$f(n) = \frac{n^2 + 2n + 2}{n^2 + n + 2} \rightarrow (n+1)(n+2) \rightarrow n \neq -1, -2$$

$$\frac{n+1}{n-1} \rightarrow n \neq 1, -1$$

$$\mathbb{R} - \{-1, 1, 2\} \rightarrow n \neq \checkmark$$

- 1

(r)

$$n^2 - 4n + 4 \rightarrow (n-2)^2 \geq 0 \rightarrow \text{مربع کامل}$$

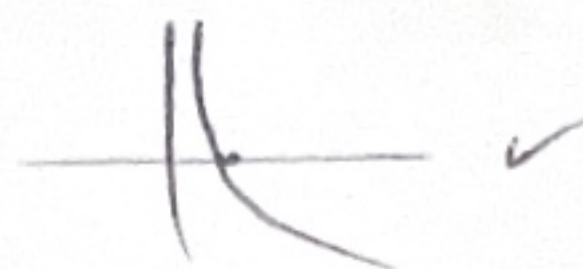
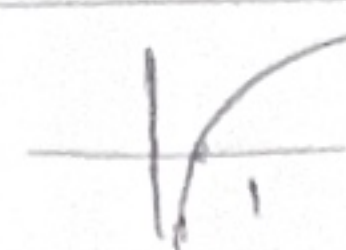
$$y = \log_{n+1} \log_{\frac{1}{n}}$$

$$\frac{n+1}{n} \cdot \frac{1}{n} \cdot 1$$

$$\textcircled{1} \quad n > -1$$

$$\log_{\frac{1}{n}} > 0$$

$$\rightarrow \textcircled{2} \quad n < 1$$



$$\textcircled{1} \wedge \textcircled{2} \wedge \textcircled{3} \Rightarrow D_f = (-1, 1) \checkmark$$

(r) (4)

$$D_f(n) = [-\frac{1}{\sqrt{e}}, \frac{1}{\sqrt{e}}]$$

$$f(e^{n^2}-1) \rightarrow$$

$$-\frac{1}{\sqrt{e}} \leq e^{n^2}-1 \leq \frac{1}{\sqrt{e}}$$

$$-\frac{1}{\sqrt{e}} \leq e^{n^2} \leq \frac{1}{\sqrt{e}} + 1$$

$$e^{n^2} \leq \frac{1}{\sqrt{e}} + 1$$

$$n^2 \leq \frac{\ln(\frac{1}{\sqrt{e}} + 1)}{\ln e} \rightarrow -\frac{1}{\sqrt{e}} \leq n \leq \frac{1}{\sqrt{e}}$$

$$D_f = [-\frac{1}{\sqrt{e}}, \frac{1}{\sqrt{e}}] \checkmark$$

(r) - 1.