

$$ب) 3|x| - 9 \geq 0 \rightarrow 3|x| \geq 9 \rightarrow |x| \geq 3$$

$$D_f = (-\infty, -3] \cup [3, +\infty)$$

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$$الف) |x| - 3 \neq 0 \rightarrow |x| \neq 3 \rightarrow x \neq 3, x \neq -3$$

$$D_f = \mathbb{R} - \{-3, 3\}$$

$$ب) \begin{cases} x \geq 0 \\ \sqrt{x} - 3 \neq 0 \end{cases} \rightarrow \sqrt{x} \neq 3 \rightarrow x \neq 9$$

$$D_f = [0, 9) \cup (9, +\infty)$$

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$$الف) 2 \cos x - 1 \neq 0 \rightarrow \cos x \neq \frac{1}{2}$$

$$D_f = \mathbb{R} - \left\{ 2k\pi + \frac{\pi}{3}, 2k\pi + \frac{2\pi}{3} \right\}$$

$$ب) 2 \sin x + 1 \neq 0 \rightarrow \sin x \neq -\frac{1}{2}$$

$$D_f = \mathbb{R} - \left\{ 2k\pi + \frac{4\pi}{3}, 2k\pi + \frac{11\pi}{3} \right\}$$

$$ج) \tan x, \cot x \text{ defined} \Rightarrow x \neq \frac{k\pi}{r}$$

$$\cot x - 1 \neq 0 \rightarrow \cot x \neq 1 \rightarrow x \neq k\pi + \frac{\pi}{4}$$

$$D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{4}, \frac{k\pi}{r} \right\}$$

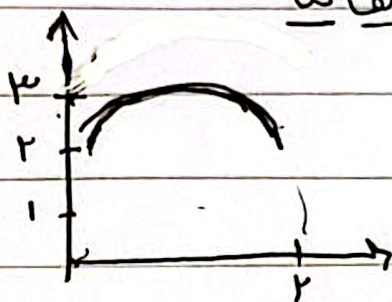


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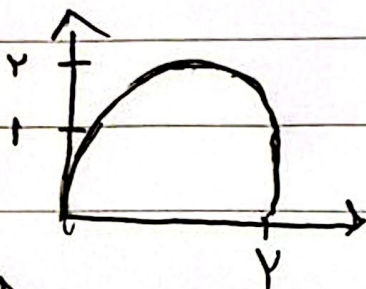
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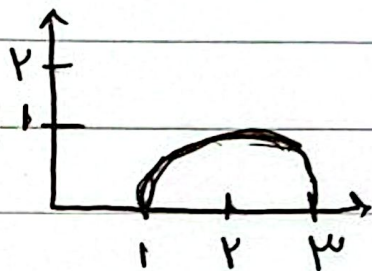
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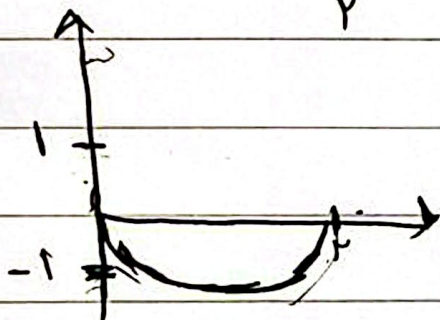
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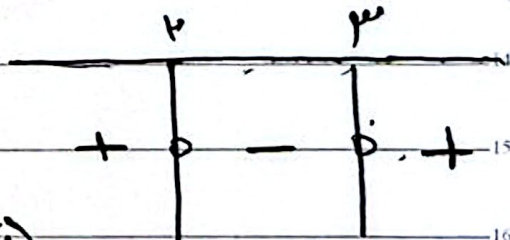
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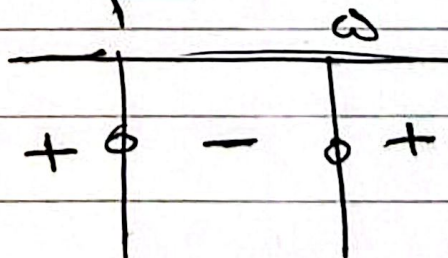
$$x^2 - \omega x + 4 > 0$$

$$(x^2 - 3)(x^2 - 2) > 0 \quad \begin{matrix} \nearrow x \neq 2 \\ \searrow x \neq 3 \end{matrix}$$

$$(-\infty, 2) \cup (3, +\infty)$$



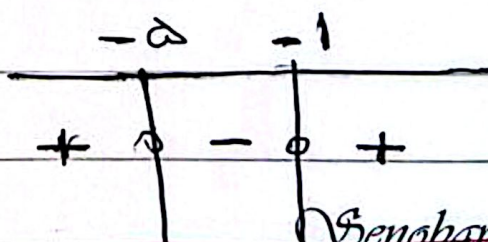
$$\rightarrow \begin{cases} n = 1 \\ n = \omega \end{cases}$$



$$(1, \omega)$$

$$ج) n^2 + 4 + \omega > 0$$

$$(n+1)(n+\omega) > 0$$

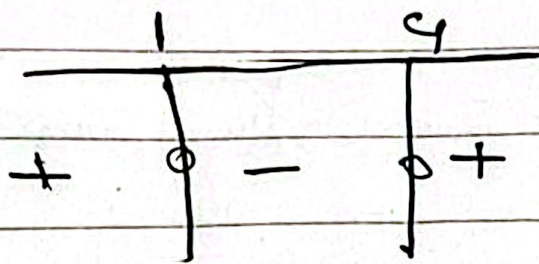


$$\begin{matrix} \nearrow \\ n = -1 \end{matrix} \quad \begin{matrix} \searrow \\ n = -\omega \end{matrix}$$

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

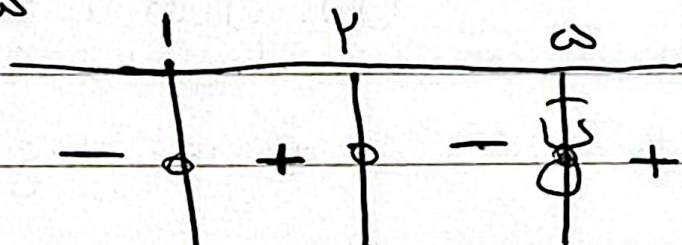
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$$1) \quad x^2 - 5x + 4 \leq 0 \quad a+b+c=0 \quad \begin{cases} x=1 \\ x=\frac{c}{a}=4 \end{cases}$$

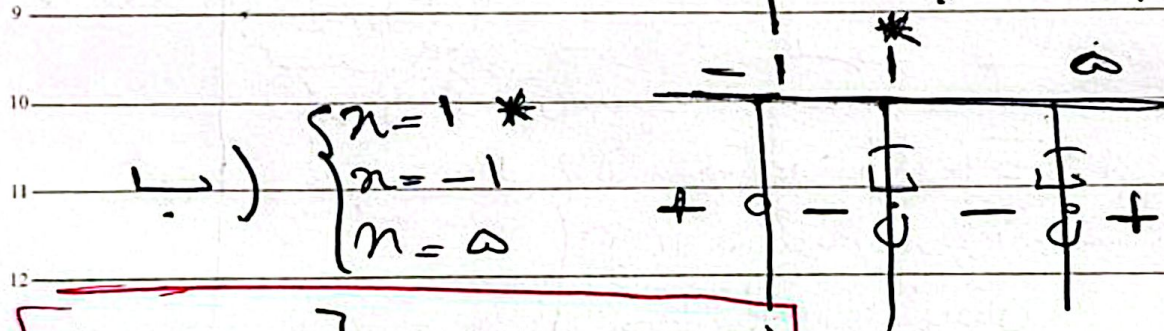


$$[1, 4]$$

$$2) \quad \frac{(x-2)(x-1)}{x-5} < 0$$



$$(-\infty, 1) \cup (2, 5)$$



$$(-\infty, -1] \cup (5, +\infty)$$

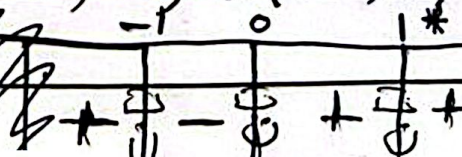
$$3) \quad \frac{x^2-1}{x^2-x} \geq 0, \quad x^2-x \neq 0 \quad \begin{cases} x=1 \\ x=-1 \end{cases}$$

$$\frac{(x-1)(x+1)}{x(x-1)(x+1)} \geq 0 \quad \rightarrow \quad \frac{x-1}{x(x-1)(x+1)} \geq 0$$

$$Df = (-\infty, -1) \cup (0, 1) \cup (1, +\infty)$$



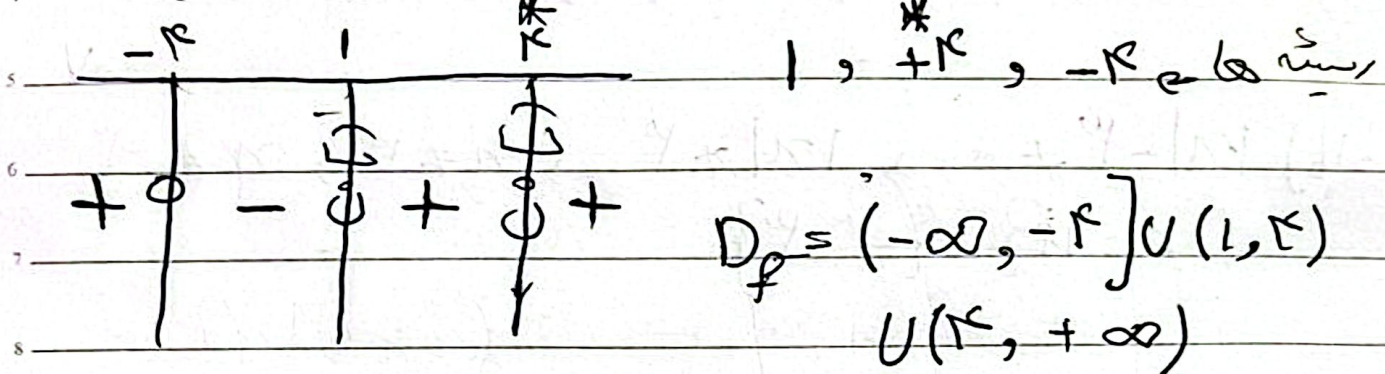
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$$1 \rightarrow \frac{n^2 - 14}{n^2 - 2n + 1} \geq 0, n^2 - 2n + 1 \neq 0$$

$$\frac{(n-1)(n+1)}{(n-1)(n-1)} \geq 0$$

$$(n-1)(n-1) \neq 0 \rightarrow n \neq 1, n \neq 1$$



$$\text{ا) } \begin{cases} 1 - n \geq 0 \rightarrow 1 \geq n \rightarrow n \leq 1 \\ 1 - \sqrt{1-n} \geq 0 \rightarrow 1 \geq \sqrt{1-n} \rightarrow 1 \geq 1 - n \rightarrow n \geq -1 \end{cases}$$

$$D_f = [-1, 1]$$

$$\text{ب) } \begin{cases} n - 1 \geq 0 \rightarrow n \geq 1 \\ 1 - \sqrt{n-1} \geq 0 \rightarrow 1 \geq \sqrt{n-1} \rightarrow n \leq 2 \end{cases}$$

$$D_f = [1, 2]$$

$$\text{ج) } 1 - 2n^2 \geq 0 \rightarrow 2n^2 \leq 1 \rightarrow n^2 \leq \frac{1}{2} \rightarrow -\sqrt{\frac{1}{2}} \leq n \leq \sqrt{\frac{1}{2}}$$

$$D_f = [-\sqrt{\frac{1}{2}}, \sqrt{\frac{1}{2}}]$$



$$1) K \sin^2 x - 1 \neq 0 \rightarrow \sin^2 x \neq \frac{1}{K} \rightarrow \sin x \neq \pm \frac{1}{\sqrt{K}}$$

$$D_f = \mathbb{R} - \left\{ K\pi \pm \frac{\pi}{\sqrt{K}} \right\}$$

$$2) |x-2| - \frac{1}{x} > 0 \rightarrow |x-2| > \frac{1}{x}$$

$$\textcircled{1} x-2 > \frac{1}{x} \rightarrow x > \frac{1}{x-2} \quad \textcircled{2} x-2 < \frac{1}{x} \rightarrow x < \frac{1}{x-2}$$

$$D_f = (-\infty, \frac{1}{x-2}) \cup (\frac{1}{x-2}, +\infty)$$

$$3) K - 2|x| \geq 0 \rightarrow 2|x| \leq K$$

$$|x| \leq \frac{K}{2} \rightarrow -\frac{K}{2} \leq x \leq \frac{K}{2} \quad D_f = \left[-\frac{K}{2}, \frac{K}{2}\right]$$

$$4) y = \sqrt{\frac{|x|}{|x|}} \rightarrow y = \sqrt{1}$$

$$|x| \neq 0 \rightarrow x \neq 0 \rightarrow D_f = \mathbb{R} - \{0\}$$

