

$2x^2 - 4x + y^2 + 4y + k = 0$ $2x^2 - 4x + k_1 + y^2 - 4y + k_2 = 0$ $x^2 - 2x + 2k_1 = 0$ $(x-1)(x-k_1) = 0$ $-1 - k_1 = -4$ $k_1 = 3$ $y^2 + 4y + k_2 = 0$ $(y+2k_2)^2 = 0$ $2k_2 = 2$ $k_2 = 1$ $k_1 + k_2 = 4$	$2(x-1)^2 - 2 + 4(y+2)^2 - 4 + k = 0$ $k = 4$	۱
$x^2 + 4x$; $x \geq a$ I $2x + 4 + 2$; $x \leq a$ II $(a)^2 + 4(a) = 2(a) + 4 + 2$ $a^2 + 4a = 2a + 4$ $a^2 + a - 2 = 0$ $(a+2)(a-1) = 0$ $a = -2$, 1 $a = -2$, 1	$x^2 + 4x$; $x \geq 1$ $2x + 4$; $x \leq 1$ $f(1) = 0$	۲
$2x^2 - b$; $ x+1 \geq 2$ $a + 12$; $-2 \leq x \leq -1$ II $ x+1 \geq 2$ $x+1 \geq 2$ $\Rightarrow x \geq 1$ I $x+1 \leq -2$ $\Rightarrow x \leq -3$ I $I \cap II \Rightarrow x = -3$ $2(-3)^2 - b = a + 2(-3)$ $18 - b = a - 6$ $a + b = 24$		۳
$4x - a \geq 0$ I $b - 2x \geq 0$ II $x \geq \frac{a}{4}$ $x \leq \frac{b}{2}$ $\frac{b}{a} = \frac{4}{12} = \frac{1}{3}$	$I \cap II = \{2\}$ $a \leq 12$ $b \geq 4$ $12 - a = 0 \Rightarrow a = 12$ $b - 4 = 0 \Rightarrow b = 4$	۴
$\frac{x+1}{ x-2 } \geq 0$ $\frac{4-x}{x^2+x+4} \geq 0$ $I = [-1, +\infty) - \{3\}$ $II = (-\infty, 4]$ $I \cap II = [-1, 4] - \{3\}$ $DI = [-1, 4] - \{3\}$	هرگاه می‌تواند در آزمون قبول شود یعنی آن در عدد ۰ شده اند و در صورت دیگر یکی از آنها منفی می‌شود و معرغه نمی‌شود	۵
$[x] - 4 \geq 0$ $[x] \geq 4$ $x \geq 4$	$2 - [x] \geq 0$ $[x] \leq 2$ $x < 3$	۶

$$y = \sqrt{\frac{x^2 - x - 4}{x^2 - 13x + 24}} \Rightarrow \frac{(x-4)(x-1)}{(x-4)(x-3)} \geq 0$$

$$Df = (-\infty, -4) \cup (1, 4) \cup (4, +\infty) \quad \checkmark$$

$$\frac{-3}{+} \frac{-2}{+} \frac{-1}{+} \frac{0}{+} \frac{1}{+} \frac{2}{+} \frac{3}{+}$$

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$$\frac{x^2 - 13x + 24}{x^2 - x - 4} \geq 0 \quad \frac{x-1}{x^2 - x - 4} \geq 0$$

$$\frac{x^2 - 13x + 24}{x^2 - x - 4} \geq 0 \quad \frac{(x-1)(x-4)(x+2)}{(x+1)(x+3)(x-4)} \geq 0$$

$$\frac{(x-1)(x-4)(x+2)}{(x+1)(x+3)(x-4)} \geq 0$$

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$$Df = (-\infty, -2) \cup (-2, -1) \cup [1, 2) \cup [2, +\infty) \quad \checkmark$$

$$\frac{-2}{+} \frac{-1}{+} \frac{0}{+} \frac{1}{+} \frac{2}{+}$$

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$$\sqrt{[x] - 1} \quad [x] - 1 \geq 0 \Rightarrow x \geq 1 \quad Df = (-\infty, -1] \quad \checkmark$$

$$Df: \Delta x \neq 0 \Rightarrow Df = \mathbb{R}$$

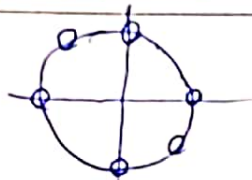
$$[x] - 1 \geq 0 \Rightarrow x \geq 1 \quad Df = (-\infty, -1] \cup [1, +\infty) \quad \checkmark$$

$$\frac{-1}{+} \frac{0}{+} \frac{1}{+} \frac{2}{+}$$

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$$\sin \neq 0 \quad \tan \neq 1 \neq 0$$



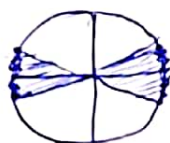
$$Df = \mathbb{R} - \left\{ \frac{k\pi}{2}, k\pi - \frac{\pi}{4} \right\} \quad \checkmark$$

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$$(1 - y \sin x)(1 + y \sin x) \geq 0$$

$$\frac{-1}{+} \frac{1}{+}$$



$$Df = \left[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right] \quad \checkmark$$

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$$I: x-1 > 0 \quad II: 1 - \log \frac{x-1}{y} \geq 0 \quad \log \frac{x-1}{y} = -\log \frac{y}{x-1} \geq -1 \Rightarrow x-1 \geq \frac{1}{y} \Rightarrow x \geq \frac{y}{y} + 1$$

$$I \cap II \Rightarrow Df = x \geq \frac{y}{y} + 1 \quad \checkmark$$

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$$I: x^2 - x \geq 0 \quad R = (0, 1) \quad \frac{0}{+} \frac{1}{+}$$

$$II: x^2 - x > 0 \quad x(x-1) > 0 \quad R = [0, 1] \quad \frac{0}{+} \frac{1}{+}$$

$$III: 1 - \log \frac{x^2 - x}{y} \neq 0 \Rightarrow \log \frac{x^2 - x}{y} \neq 0 \Rightarrow x^2 - x \neq y \quad Df = (-\infty, 0) \cup (y, +\infty) - \{x^2 - x = y\} \quad \checkmark$$

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$$x^2 - x - 1 \geq 0 \quad x^2 - 5x + 4 \leq 0 \quad (x-1)(x-4) \leq 0$$

$$Df = [1, 4] \quad \checkmark$$

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$$\frac{a+b}{c+d} = y \Rightarrow x = -\frac{(dy-b)}{cy-a}$$

$$x = -\frac{cy-a}{cy-a} = \frac{a-cy}{cy-a} \Rightarrow Df = \left\{ x \mid x = \frac{a-cy}{cy-a}, y \in \mathbb{R} \right\} \quad \checkmark$$

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