

نام و نام خانوادگی عیسیٰ حسینی پاسخنامه تشریحی تکلیف شماره ۲ کلاس (مترجم)

$$\begin{aligned}
 2x^2 + y^2 - 4x + 4y + k &= 0 \rightarrow 2x^2 - 4x + y^2 + 4y + k = 0 \rightarrow 2(x^2 - 2x) + y^2 + 4y + k = 0 \\
 &\rightarrow 2(x-1)^2 - 2 + (y+2)^2 - 4 = 0 \rightarrow 2(x-1)^2 + (y+2)^2 - 6 + k = 0 \\
 &\rightarrow 2(x-1)^2 + (y+2)^2 = 6 - k \rightarrow 6 - k > 0 \rightarrow \boxed{6 > k}
 \end{aligned}$$

هیند ناسنی

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$$\begin{aligned}
 x^2 + 4x &= 2x + a + 2 \rightarrow a^2 + 4a = 3a + 2 \rightarrow a^2 + a = 2 \rightarrow a^2 + a - 2 = 0 \rightarrow (a+2)(a-1) = 0 \\
 x=a &\text{ فرض کنیم} \\
 \Rightarrow a = -2 \text{ یا } a = 1 \checkmark &\rightarrow x^2 + 4x = 2x + 1 + 3 \xrightarrow{n=1} \boxed{f(1) = 5}
 \end{aligned}$$

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اگر $a > 0$ نبرد سله

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$$\begin{aligned}
 |x+1| &\geq 2 \rightarrow \begin{cases} x+1 \geq 2 \rightarrow x \geq 1 \\ x+1 \leq -2 \rightarrow x \leq -3 \end{cases} , \text{ این دو را با } x=3 \text{ و } x=-1 \text{ از طرفی} \\
 x=-2 &\rightarrow 2(-2)^2 - b = a - 4 \rightarrow 2 \cdot 4 + 4 = a + b \rightarrow \boxed{24 = a + b}
 \end{aligned}$$

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$$\begin{aligned}
 \sqrt{4x-a} + \sqrt{b-3x} &\xrightarrow{x=2} \begin{cases} 4x-a \geq 0 \rightarrow 12-a \geq 0 \rightarrow 12 \geq a \\ b-3x \geq 0 \rightarrow b-6 \geq 0 \rightarrow b \geq 6 \end{cases} \rightarrow x=2 \rightarrow \frac{b}{a} = \frac{4}{12} \\
 \Rightarrow \boxed{\frac{b}{a} = \frac{1}{3}}
 \end{aligned}$$

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$$\begin{aligned}
 \text{الف) } \sqrt{\frac{x+1}{|x-3|}} + \sqrt{\frac{4-x}{x^2+2x+2}} &\rightarrow \begin{cases} x+1 \geq 0 \rightarrow x \geq -1 \\ 4-x \geq 0 \rightarrow x \leq 4 \end{cases} \rightarrow [-1, 4] - \{3\} = D_{f_1} \\
 \text{ب) } \sqrt{[x]-2} + \sqrt{2-[x]} &\sim \begin{cases} [x]-2 \geq 0 \rightarrow [x] \geq 2 \rightarrow x \geq 2 \\ 2-[x] \geq 0 \rightarrow 2 \geq [x] \rightarrow x < 3 \end{cases} \\
 &\rightarrow D_{f_2} = (-\infty, 3) \cup [2, \infty)
 \end{aligned}$$

صورتی که $x \neq 3$

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ا) $\sqrt{\frac{x^2-x-4}{x^2-13x+34}} \sim \sqrt{\frac{(x-4)(x+1)}{x^2-13x+34}} \sim \sqrt{\frac{(x-4)(x+1)}{(x-9)(x-4)}} \sim \sqrt{\frac{(x-4)(x+1)}{(x+1)(x+2)(x-4)(x+2)}}$ $\frac{-4}{+} \frac{-1}{-} \frac{1}{+} \frac{1}{+} \frac{2}{+} \frac{2}{+} \rightarrow (-\infty, -4) \cup (1, +\infty) - \{1\}$ ب) $\sqrt{x-1} \rightarrow (x-1)(x-4)(x+2)$ $\frac{-1}{+} \frac{-4}{+} \frac{-1}{-} \frac{1}{+} \frac{2}{+} \frac{2}{+} \rightarrow (-\infty, -4) \cup (1, +\infty)$ ج) $\sqrt{x-2} \rightarrow (x-2)(x+1)(x+2)$ $\frac{-2}{+} \frac{-1}{-} \frac{1}{+} \frac{1}{+} \frac{2}{+} \frac{2}{+} \rightarrow (-\infty, -2) \cup (1, +\infty)$	8
ا) $\sqrt{[-\lambda]-1} \rightarrow [-\lambda]-1 \geq 0 \rightarrow [-\lambda] \geq 1 \rightarrow -\lambda \geq 1 \rightarrow \lambda \leq -1 \rightarrow (-\infty, -1]$ ب) $[\lambda]^2-1 \rightarrow ([\lambda]-1)([\lambda]+1) \neq 0 \rightarrow [\lambda] \neq 1$ $\hookrightarrow \mathbb{R} - [1, +\infty)$ ج) $[\lambda] \neq -1 \rightarrow \mathbb{R} - [-1, +\infty)$ د) $I, II \sim (-\infty, -1) \cup [0, 1) \cup [2, +\infty)$	9
ا) $\frac{\cos x}{\sin x} + 1 = \frac{\cos x + \sin x}{\sin x} = \frac{\cos x}{\sin x} = \cot x$ ب) $\sqrt{1-\sin^2 x} \rightarrow 1-\sin^2 x \geq 0 \rightarrow 1 \geq \sin^2 x \rightarrow \frac{1}{\sqrt{2}} \geq \sin x \rightarrow \frac{\pi}{4} \geq x$ ج) $\frac{1}{\sqrt{2}} \geq \sin x$ I د) $\frac{1}{\sqrt{2}} \leq -\sin x \rightarrow -\frac{1}{\sqrt{2}} \geq \sin x$ II هـ) $\frac{\pi}{4} \leq x \leq \frac{3\pi}{4}$	10
ا) $x-1 > 0 \rightarrow x > 1$ I ب) $1 - \log \frac{x-1}{x} \geq 0 \rightarrow 1 \geq \log \frac{x-1}{x} \rightarrow x-1 \leq \frac{x}{x} \rightarrow x \leq \frac{x}{x} \rightarrow x \leq 1$ II ج) $x^2-x \geq 0 \rightarrow x(x-1) \geq 0$ $\frac{x}{+} \frac{1}{-} \frac{1}{+} \frac{x}{+} \rightarrow x \in (-\infty, 0] \cup [1, +\infty)$ د) $x^2-1 > 0 \rightarrow x(x-1) > 0$ $\frac{x}{+} \frac{1}{-} \frac{1}{+} \frac{x}{+} \rightarrow x \in (-\infty, -1) \cup (1, +\infty)$ هـ) $\log_{x-1} x \neq 1 \rightarrow x^2-x \neq x \rightarrow x^2-x-x \neq 0 \rightarrow x^2-2x \neq 0 \rightarrow x(x-2) \neq 0 \rightarrow x \neq 0, 2$	11
ا) $\sqrt{x^2-x^2} \geq 1 \rightarrow x^2-x^2 \geq 1 \rightarrow x^2-x^2 \geq 1 \rightarrow x^2-x^2+1 \geq 0$ ب) $(x-1)(x-2) \leq 0$ $\frac{1}{+} \frac{2}{-} \frac{1}{+} \frac{2}{+} \rightarrow x \in [1, 2]$ ج) $\frac{x^2+0}{x^2+1} \in \mathbb{W} \rightarrow x = \frac{x^2+0}{x^2+1} \sim x \rightarrow x = \frac{x^2+0}{x^2+1}, k \in \mathbb{W}$	12