

①

$$f(x) = \sqrt{\frac{x-1}{x} - \frac{x}{x-1}} \rightarrow \frac{x-1}{x} - \frac{x}{x-1} > 0 \xrightarrow{\text{خرج مشترک}} \frac{x^2 - 2x + 1 - x^2}{x^2 - x} > 0$$

$$\rightarrow \frac{-2x+1}{x^2-x} > 0 \quad \begin{array}{c} 0 \quad \frac{1}{2} \quad 1 \\ + \quad - \quad + \quad - \end{array} \Rightarrow Df = (-\infty, 0) \cup [\frac{1}{2}, 1) \quad \checkmark$$

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$$f(x) = \frac{1}{x+1} - \frac{2}{x} \rightarrow \frac{x}{x+1} - \frac{2(x+1)}{x(x+1)} > 0$$

خرج مابین
نامایه مشترک

$$\Rightarrow Df = \mathbb{R} - \left\{ -2, -\frac{5}{2}, -1, 0, 1 \right\} \quad \checkmark$$

$$\left. \begin{array}{l} x+1 \neq 0 \sim x \neq -1 \quad I \\ x \neq 0 \quad II \\ x-1 \neq 0 \sim x \neq 1 \quad III \\ x+2 \neq 0 \sim x \neq -2 \quad IV \\ \frac{x}{x-1} + \frac{1}{x+2} \neq 0 \rightarrow \frac{x^2 + x - 1}{x^2 + x - 2} = \frac{x+5}{(x+2)(x-1)} \neq 0 \\ \Rightarrow x+5 \neq 0 \sim x \neq -\frac{5}{2} \quad V \end{array} \right\} \cup$$

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$$f(x) = \sqrt{\left(\frac{1}{x} - 9\right)(2x - 4^x)} \rightarrow \left(\frac{1}{x} - 9\right)(2x - 4^x) > 0$$

$$\text{If } x = -2 \rightarrow 0$$

$$\text{If } x = 2/5 \rightarrow 0$$

$$\star \text{ مبنی تعیین علامت عددی دهم } x=0 \rightarrow \oplus$$

$$Df = (-\infty, -2] \cup [2/5, +\infty) \quad \checkmark$$

$$f(x) = \sqrt{x-1} + \sqrt{y+1} = 3 \quad x-1 > 0 \sim x > 1 \quad I$$

$$\sqrt{y+1} = 3 - \sqrt{x-1} \rightarrow 3 - \sqrt{x-1} > 0 \rightarrow 3 > \sqrt{x-1} \xrightarrow{\text{مربع}} 9 > x-1$$

$$\Rightarrow Df = [1, 10] \quad \checkmark$$

$$10 > x \quad II$$

$$f(x) = \frac{\log_e (x^2 - x - 2)}{\sqrt{x^2 - 1} + 1}$$

$$I \sim x^2 - x - 2 > 0 \sim (x-2)(x+1) > 0 \quad \begin{array}{c} -1 \quad 2 \\ + \quad - \quad + \end{array}$$

$$I = (-\infty, -1) \cup (2, +\infty) \quad \textcircled{3}$$

$$II \sim x^2 - 1 > 0 \sim (x-1)(x+1) > 0$$

$$\begin{array}{c} -1 \quad 1 \\ + \quad - \quad + \end{array}$$

$$II = (-\infty, -1] \cup [1, +\infty) \quad \textcircled{2}$$

$$III \sqrt{x^2 - 1} \neq -1 \sim \text{همواره برقرار است}$$

$$\Rightarrow Df = I \cap II = (-\infty, -1) \cup (2, +\infty) \quad \checkmark$$

$$f(x) = \sqrt{3+ax-x^2} \sim \begin{cases} x^2+ax+3 \geq 0 \end{cases}$$

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$$Df = [-2, b]$$

$$\frac{-2}{-1} \frac{b}{1} \sim \text{If } x = -2 \rightarrow 0 \Rightarrow -1-2a+3 \geq 0$$

$$a = -\frac{1}{2} \checkmark$$

$$\rightarrow -x^2 - \frac{1}{2}x + 3 \geq 0 \quad \frac{c}{a} = p \quad -3 = -2 \times b \sim b = \frac{3}{2} \checkmark$$

$$* a+b = -\frac{1}{2} + \frac{3}{2} = 1 \checkmark$$

$$f(x) = \begin{cases} 2x-2 & ; x \geq 1 \\ 2x+3 & ; x < 1 \end{cases} \sim \begin{cases} 2x-2 \geq x & -2x-2 \geq 0 \sim x \geq -1 \checkmark \\ 2x+3 \geq x & \sim x \geq -3 \times \end{cases}$$

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$$g(x) = \sqrt{f(x) - x}$$

$$\sim f(x) - x \geq 0 \sim f(x) \geq x$$

مای دایم، قطعه این میات

عدد کمتر از ۱ به هم پس:

$$-3 \leq x < 1 \checkmark \text{ II}$$

$$\text{I.U.II}, Dg = [-3, +\infty) \checkmark$$

$$f(x) = \begin{cases} (a+1)(x+2) & ; x \geq 1 \\ 2a+2x & ; x < 1 \end{cases}$$

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$$2f(a) = f(-2) + a \sim 2(va+v) = 2a-4+a$$

$$14a+14 = 2a-4$$

$$10a = -18 \sim a = -1.8 \checkmark$$

$$f(x) = \sqrt{2x} + \frac{1}{\sqrt{2x}} + 2$$

$$2 - \sqrt{3} = x_1$$

$$2 + \sqrt{3} = x_2$$

$$(2 - \sqrt{3})(2 + \sqrt{3}) = 1$$

$$\sqrt{x_1 x_2} = t$$

$$\begin{aligned} f(x_1) &= \frac{1}{t} + t + 2 \\ f(x_2) &= t + \frac{1}{t} + 2 \end{aligned} \} \oplus \Rightarrow 2(t + \frac{1}{t} + 2) \Rightarrow 2(\sqrt{6} + 2) = \boxed{4 + 2\sqrt{6}} \checkmark$$

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$$2 + \frac{1}{t^2} = 2 + \sqrt{3} + 2 - \sqrt{3} = 4$$

$$\sim (t + \frac{1}{t})^2 = t^2 + \frac{1}{t^2} + 2 = 4 + 2 = 6 \sim \boxed{t + \frac{1}{t} = \sqrt{6}}$$

باردیم سر B

معین نصی

تکلیف شماره ۴

$$2f(x) - 3f(-x) = \varepsilon x^2 - 2x \quad \xrightarrow{\text{جای } x, -x} \Rightarrow x = -x \rightarrow 2f(-x) - 3f(x) = \varepsilon x^2 + 2x \quad (1)$$

$$\Rightarrow \begin{cases} (2f(x) - 3f(-x) = \varepsilon x^2 - 2x) \times 2 \\ (2f(-x) - 3f(x) = \varepsilon x^2 + 2x) \times 3 \end{cases}$$

$$\oplus \quad -\Delta f(x) = 10\varepsilon x^2 + 2x$$

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$$f(x) = -\varepsilon x^2 - \frac{x}{\Delta} \quad \checkmark$$

$$(x+2)f(x) - 3xf(x+2) = \varepsilon x^2 - mx + 3m - 1$$

$$x = -2 \rightarrow \begin{cases} 4f(0) = 5m + 1\Delta \end{cases}$$

$$x = 0 \rightarrow \begin{cases} 2f(0) = 3m - 1 \end{cases} \times 2 \rightarrow 4f(0) = 6m - 2 \rightarrow 2f(0) = 3m - 1$$

$$\Rightarrow 6m - 2 = 5m + 1\Delta$$

$$m = 1\Delta$$

$$m = \frac{1\Delta}{\varepsilon} = \frac{9}{2} \quad \checkmark$$

$$f(0) = \frac{2\Delta}{\varepsilon} = f(0) \quad \checkmark$$

$$f(x) + f\left(\frac{1}{x}\right) = \frac{3x^2 - 12x + 3}{2x}$$

$$x = -1 \rightarrow f(-1) + f(-1) = \frac{3+12+3}{-2} \rightarrow 2f(-1) = -11$$

$$f(-1) = -\frac{11}{2} \quad \checkmark$$

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