

نام و نام خانوادگی: بهرامی پاسخنامه تشریحی تکلیف شماره ... لا ... کلاس پایه دهم ریاضی

$$f(x) = \sqrt{x+4}\sqrt{x-4} - 4 + 4 \rightarrow \sqrt{(x-4)+4+4}\sqrt{x-4} = \sqrt{(\sqrt{x-4}+2)^2} = |\sqrt{x-4}+2|$$

$$g(x) = \sqrt{x-4}\sqrt{x-4} \rightarrow \sqrt{(x-4)-2}\sqrt{x-4} = |\sqrt{x-4}-2| \rightarrow g(x) = \begin{cases} \sqrt{x-4}+2 & \text{اگر } \sqrt{x-4}+2 \geq 0 \\ \sqrt{x-4}-2 & \text{اگر } \sqrt{x-4}-2 < 0 \end{cases}$$

$$f(x)+g(x) = a+b\sqrt{x+c}$$

$$\begin{cases} a=0 \\ b=2 \\ c=-4 \end{cases} \quad \frac{a+b}{c} = -\frac{1}{4}$$

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$$g(x) = \{(2,1), (1,0), (3,5), (0,4)\} \text{ و } f(x) = \frac{x+2}{x^2-4x+3}$$

$$\frac{g}{f} = \{(0,4), (2, -\frac{1}{4})\}$$

$$\begin{aligned} f(0) &\rightarrow \frac{2}{3} & \frac{g(0)}{f(0)} &= 4 & f(2) &= -4 \\ g(0) &= 4 & & & g(2) &= 1 \end{aligned}$$

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$$f(x) = \begin{cases} 1, 3, 5, -1 \\ \lambda = \frac{1}{4}, \frac{3}{4}, 2, -\frac{1}{4} \end{cases} \quad f(2) = \left\{ \left(\frac{1}{4}, 2\right), \left(\frac{3}{4}, -1\right), (2, 2), \left(-\frac{1}{4}, 4\right) \right\}$$

$$b) f(x^2) \text{ اگر } x^2 = 1 \rightarrow x = \pm 1 \quad / \quad x^2 = 4 \rightarrow x = \pm 2 \quad / \quad x^2 = 9 \rightarrow x = \pm 3 \quad f(x^2) = \{(1,2), (-1,2), (2,2), (-2,2), (3,2), (-3,2)\}$$

$$c) 2g^2(x)+1 \quad 2(\psi)^2+1=19 \quad 2(-1)^2+1=3 \quad 2(2)^2+1=9 \quad 2(0)^2+1=1 \quad \{(-2,19), (2,9), (0,1), (-1,3)\}$$

$$d) \frac{f}{g} \quad g(-1)=0 \quad x \neq -1 \quad x \rightarrow \frac{f(1)}{g(1)} = \frac{4}{-1} = -4 \quad x=3 \rightarrow \frac{f(3)}{g(3)} = -\frac{1}{3} \quad \frac{f}{g} = \{(1,-4), (3,-\frac{1}{3})\}$$

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$$\{2, 3, -1\}$$

$$n=2 \rightarrow h(2) = 2f(2) + g(2) = 2+3=5$$

$$n=3 \rightarrow h(3) = 2(1) + 3=5$$

$$n=-2 \rightarrow h(-2) = 2(0) + 4=4$$

$$h = \{(2,5), (3,5), (-2,4)\}$$

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$$f(x) = \frac{\sqrt{3x-x}}{x-2} \rightarrow 3x \geq 0 \rightarrow x \geq 0$$

$$\sqrt{3x-x} \geq 0 \rightarrow \sqrt{2x} \geq 0 \rightarrow 2x \geq 0 \rightarrow x \geq 0$$

$$D_f = [0, 2) \cup \{2\}$$

$$g(x) = [x] + [-x]$$

$$n \in \mathbb{Z} \rightarrow [n] + [-n] = 0 \quad \checkmark$$

$$n \notin \mathbb{Z} \rightarrow [n] + [-n] = -1$$

$$D_{\frac{f}{g+1}} = [0, 3) \cup \{3\}$$

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$2x - x^2 - 4 \geq 0 \rightarrow x^2 - 2x + 4 \leq 0$ $\hookrightarrow \frac{1}{x^2 - 2x + 4} \quad [1, 4]$ $f(1) \rightarrow 1 - 2 + 4 = 3$ $f(2) \rightarrow 4 - 4 + 4 = 4$ $f(4) \rightarrow 16 - 8 + 4 = 12$ $\left\{ (0, 4) \left(\frac{\sqrt{2}}{2}, 1 \right) (0, 1) \right\}$	6
الف) $x^3 - 3x^2 + 4x - 1 = 0$ $(x-1)^3 + 1 \rightarrow (x-1)^3 = y-1 \rightarrow x = \sqrt[3]{y-1} + 1 \quad R_f: \mathbb{R}$ ب) $y x^2 - 2xy = 1$ $y x^2 - 2xy - 1 = 0 \rightarrow \Delta \geq 0 \rightarrow 4y^2 + 4y \geq 0 \rightarrow 4y(y+1) \geq 0 \rightarrow y(y+1) \geq 0$ $R_f = (-\infty, -1] \cup (0, +\infty)$	7
الف) $y = x^2 - 4x + 10$ $-\frac{b}{2a} = \frac{4}{2} = 2 \rightarrow 4 - 8 + 10 = 6 \quad [4, +\infty)$ ب) $y = -x^2 + 6x + 3$ $-\frac{b}{2a} = \frac{-6}{-2} = 3 \rightarrow -9 + 18 + 3 = 12 \quad (-\infty, 3]$ ج) $y = \sqrt{x^2 - 4x - 3}$ $\rightarrow -\frac{b}{2a} = \frac{4}{2} = 2 \rightarrow 4 - 8 - 3 = -7 \rightarrow R_f = (0, +\infty)$ د) $y = \sqrt{6x - x^2}$ $-\frac{b}{2a} = \frac{-6}{-2} = 3 \rightarrow 18 - 9 = 9 \rightarrow \sqrt{9} = 3 \quad [0, 6]$	8
الف) $\mathbb{R}$ ب) $\mathbb{R}$ ج) $[0, +\infty)$ د) $[0, +\infty)$	9
الف) $\frac{a}{c} = 2 \rightarrow \mathbb{R} - \{2\}$ ب) $\frac{a}{c} = 2 \quad \mathbb{R} - \left\{ \frac{a}{c} \right\} \rightarrow \mathbb{R} - \{2\}$	10