

نام و نام خانوادگی (درجہ اولیٰ) پاسخنامہ تشریحی تکلیف شماره ۷ کلاس دهم ریاضی

$$\sqrt{x f(x)} \rightarrow x f(x) \geq 0$$

	-4	-2	0	2	4
x	⊖	⊖	⊖	⊕	⊕
$f(x)$	⊕	⊕	⊖	⊖	⊕
ρ	⊖	⊖	⊕	⊖	⊕

$$\rightarrow \text{دامنه تابع} = [-2, 0] \cup [2, 4]$$

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$$\frac{-x}{f(x)} \geq 0$$

	-4	-2	0	2	4
$-x$	⊕	⊕	⊖	⊖	⊖
$f(x)$	⊕	⊕	⊖	⊖	⊕
ρ	⊖	⊖	⊕	⊖	⊕

$$\rightarrow \text{دامنه تابع} = (-2, 2) \cup \{0\} \rightarrow \text{شامل ۳ عدد صحیح}$$

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$$x=2 \rightarrow f(2) - 2f(2) = 4 - 4 + 4 = 4$$

$$f(2) = -2$$

$$x=-2 \rightarrow f(-2) - 2f(-2) = 4 + 4 + 4 = 12$$

$$f(-2) = 12 - 4 = 8$$

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$$\begin{cases} f(1) \rightarrow 1 + 1^2 = 2 \\ f(2) \rightarrow 2 - \sqrt{2+4} = 0 \end{cases} \rightarrow \begin{cases} 1 + 1^2 = 2 \\ 1 + 1^2 = 2 \end{cases}$$

$$f(1) \rightarrow 1 + 1^2 = 2$$

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$$f(x) = ax^2 - bx + 1$$

$$\rightarrow a(x-1)^2 - b(x-1) + 1 - ax^2 + bx - 1$$

$$= ax^2 + a - 2ax - b + b + 1 - ax^2 + bx - 1 \Rightarrow \underbrace{-2a}_{-4}x + \underbrace{a+b}_{1} = 4x + 1$$

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$$\rightarrow \begin{cases} -2a = 4 \Rightarrow a = -2 \\ a + b = 1 \Rightarrow b = 3 \end{cases} \rightarrow a - b = -2 - 3 = -5$$

$$f(\sqrt{13}-2) = \frac{(\sqrt{13}-2)^4 + 4(\sqrt{13}-2) + 6}{(\sqrt{13}-2)^4 + 4(\sqrt{13}-2) + 7} = \frac{13 - 8\sqrt{13} + 4 + 4\sqrt{13} - 8 + 6}{13 - 8\sqrt{13} + 4 + 4\sqrt{13} - 8 + 7} = \frac{13}{14} = \frac{1}{14}$$

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$$f\left(x - \frac{1}{x}\right) = \frac{x^4}{x^4} + \frac{1}{x^4} \rightarrow \left(x - \frac{1}{x}\right)^4 + 1 \rightarrow f(x) = x^4 + 1$$

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$$f(-13) = (-13)^4 + 1 = 11$$

$$D_f = \{0, 1, 2, 4\}$$

$$D_g \Rightarrow \begin{cases} 9 - x^4 \geq 0 \\ 9 \geq x^4 \end{cases}$$

$$13 \geq x \geq -13 \rightarrow D_g = [-13, 13]$$

$$\left\{ \begin{array}{l} \text{الف) } D_f \cap D_g - \{x \mid g(x) = 0\} = \frac{f}{g} \\ \rightarrow \frac{f}{g} = \{0, 1, 2\} - \{13, -13\} = \{0, 1, 2\} \\ \rightarrow \{(1, 0), (1, \frac{1}{13}), (0, \frac{1}{13})\} \\ \text{ب) } \frac{g}{f} = D_g \cap D_f - \{x \mid f(x) = 0\} \\ \rightarrow \frac{g}{f} = \{0, 1, 2\} - \{2\} = \{0, 1\} \\ \rightarrow \{(1, \frac{13}{-13}), (0, \frac{1}{13})\} \end{array} \right.$$

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$$\text{الف) } 2f(x) = \{(1, 2), (13, 1), (-13, 1), (1, -1)\}$$

$$\text{ب) } f(x) + 1 = \{(1, 2), (13, 2), (-13, 2), (1, 0)\}$$

$$\text{ج) } 13f^4(x) + 1 = \{(1, 13), (13, 13), (-13, 13), (1, 13)\}$$

$$\text{د) } f(13x) = \{(1, 1), (\frac{13}{13}, 1), (\frac{-13}{13}, 1), (\frac{1}{13}, -1)\}$$

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$$D_f = \{1, 13, 1, 13, 13\} \quad D_g = \{1, 13, -1, -1, 13\}$$

$$f - g = D_f \cap D_g = \{(1, 13), (13, 13), (13, 1)\}$$

$$\frac{f}{g} = \{(1, \frac{13}{13}), (13, 1), (13, -1)\}$$

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