

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره ۷... کلاس: ریاضیات پایه

$$x = (x-4)f \Rightarrow x + 4\sqrt{x-4} \xrightarrow{x=(x-4)+4} (x-4) + 4 + 4\sqrt{x-4} \xrightarrow{\sqrt{x-4}=t} t^2 + 4 + 4t = (t+2)^2$$

$$\Rightarrow f(x) = \sqrt{(t+2)^2} = t+2$$

$$\Rightarrow g(x) = \sqrt{(t-2)^2} = t-2 \rightarrow f(x)+g(x) = a+b\sqrt{x+c} \Rightarrow t+2+t-2=2t=2\sqrt{x-4}$$

$$\Rightarrow a=0, b=2, c=-4 \Rightarrow \frac{a+b}{c} = \frac{0+2}{-4} = -\frac{2}{4} = -\frac{1}{2}$$

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$$D_f = \mathbb{R} - \{0, 3\}, D_g = \{2, 1, 3, 0\} \Rightarrow D_{\frac{g}{f}} = \{2, 0\}$$

$$\Rightarrow \frac{g}{f} = \left\{ \left(2, -\frac{1}{3}\right), (0, 6) \right\}$$

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الف) $f(2x) = \left\{ \left(\frac{1}{2}, 2\right), \left(\frac{3}{2}, -1\right), (2, 2), \left(\frac{1}{2}, 6\right) \right\}$

ب) $f(x^2) = \left\{ (1, 2), (\sqrt{3}, -1), (-\sqrt{3}, -1), (2, 2), (-2, 2) \right\}$

ج) $2g(x)+1 = \left\{ (-2, 19), (1, 3), (3, 9), (-1, 1) \right\}$

د) $\frac{2f}{g} = \left\{ (1, -4), (3, -1) \right\}$

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$$h = 2f + g \Rightarrow \begin{cases} 2f+g \xrightarrow{x=2} 2 \times 1 + 3 = 2+3=5 \\ 2f+g \xrightarrow{x=-2} 2 \times 0 + 6 = 0+6=6 \\ 2f+g \xrightarrow{x=3} 2 \times 1 + 3 = 2+3=5 \end{cases} \Rightarrow h = \{5, 6\}$$

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$$D_f = \{2, 3, 4, -1\}, D_g = \{5, 2, -2, -1, 3\} \Rightarrow D_{f+g} = \{2, -2, 3\}$$

$$x-2 \neq 0 \Rightarrow \frac{x \neq 2}{\textcircled{1}} \quad 2x \geq 0 \Rightarrow \frac{x \geq 0}{\textcircled{2}} \quad \sqrt{2x}-x \geq 0 \Rightarrow \sqrt{2x} \geq x \Rightarrow 2x \geq x^2$$

$$\Rightarrow \frac{2 \geq x}{\textcircled{3}} \quad \textcircled{4}$$

$$g+1 \neq 0 \Rightarrow \frac{g \neq -1}{\textcircled{5}} \Rightarrow [x] + [-x] \neq -1 \Rightarrow \frac{x \in \mathbb{Z}}{\textcircled{6}}$$

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$$\textcircled{1}, \textcircled{2}, \textcircled{3}, \textcircled{4} \Rightarrow D_{\left(\frac{f}{g+1}\right)} = \{0, 1, 3\}$$

~~تعیین می شود~~

$$h(1) = \frac{f(1)}{g(1)} = \frac{0}{1} = 0$$

$$h(2) = \frac{f(2)}{g(2)} = \frac{\sqrt{2}}{2} = \frac{1}{\sqrt{2}}$$

$$h(4) = \frac{f(4)}{g(4)} = \frac{0}{4} = 0$$

$$h(\omega) = \frac{f(\omega)}{g(\omega)} = \frac{\sqrt{-\omega}}{1} \rightarrow \text{تعریف نشده}$$

$$\Rightarrow h(1)=0, h(2)=\frac{1}{\sqrt{2}}, h(4)=0$$

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الف) $\min \left| \frac{-b}{2a} = 2 \right| \Rightarrow R_f = [9, +\infty)$

ب) $\max \left| \frac{-b}{2a} = 3 \right| \Rightarrow R_f = (-\infty, 12]$

ج) $\min \left| \frac{-b}{2a} = 2 \right| \Rightarrow R_f = [V, +\infty) = [0, +\infty)$

د) $\max \left| \frac{-b}{2a} = 3 \right| \Rightarrow R_f = (-\infty, 9] = [0, 3]$

این سوال است

الف) $x^2 - 2x^2 + 2x + 1 \xrightarrow{\text{توان فرد}} R_f = \mathbb{R}$ ب) $x^4 - 9x^2 + 3x + 2 \xrightarrow{\text{توان فرد}} R_f = \mathbb{R}$

ج) $\sqrt{x^4 - 9x^2 + 2x + 1} \xrightarrow{\text{توان فرد}} R_f = \mathbb{R} = [0, +\infty)$

د) $(x^4 - 9x^2 + 2x + 1)^2 \xrightarrow{\text{توان فرد}} R_f = (\mathbb{R})^2 \Rightarrow R_f = [0, +\infty)$

این سوال است

الف) $y = x^3 - 3x^2 + 3x \Rightarrow y = x^3 - 3x^2 + 3x - 1 + 1 = (x-1)^3 + 1 \Rightarrow y = (x-1)^3 + 1 \Rightarrow y-1 = (x-1)^3 \Rightarrow x-1 = \sqrt[3]{y-1} \Rightarrow x = \sqrt[3]{y-1} + 1 \Rightarrow y = R_f = \mathbb{R}$

ب) $y = \frac{1}{x^2 - 2x} = \frac{1}{(x-1)^2 - 1} \Rightarrow (x-1)^2 - 1 = \frac{1}{y} \Rightarrow (x-1)^2 = \frac{1}{y} + 1 \Rightarrow x-1 = \sqrt{\frac{1}{y} + 1} \Rightarrow x = \sqrt{\frac{1}{y} + 1} + 1 \Rightarrow \frac{1}{y} + 1 \geq 0 \Rightarrow \frac{1}{y} \geq -1 \Rightarrow y \in (-\infty, -1] \cup (0, +\infty) = R_f$

این سوال است

الف) $y = \frac{2x+1}{x-2} \Rightarrow R_f = \mathbb{R} - \{2\}$ ب) $y = \frac{2x+1}{x+1} \Rightarrow R_f = \mathbb{R} - \{2\}$
 $\hookrightarrow \frac{a}{c} = 2$

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