

$$f(x) \begin{cases} (a+1)(x+2) : x > 1 \\ Ca + 2x : x \leq 1 \end{cases} \quad \left\{ \begin{array}{l} 2f(0) = f(-1) + a \\ \downarrow \quad \quad \downarrow \quad \downarrow \\ 12a + 12 = Ca - 1 + a \\ 10a = -11 \rightarrow a = -11/10 \end{array} \right.$$

$$f(0) = 12a + 12$$

$$f(-1) = -1 + Ca$$

$$f(x) = \sqrt{x} + \frac{1}{\sqrt{x}} + 2 \quad \left\{ \begin{array}{l} f(x-\sqrt{x}) + f(x+\sqrt{x}) = 9 \end{array} \right.$$

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

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

$$A = 2 - \sqrt{x} + 2 + \sqrt{x} + 2\sqrt{x} = 6 \rightarrow A = \sqrt{6} \Rightarrow \text{جواب} = 2\sqrt{6} + 4$$

$$2f(x) - Cf(-x) = \Sigma x^2 - x \xrightarrow{\times 2} 4f(x) - Cf(-x) = 2x^2 - 2x$$

$$2f(-x) - Cf(x) = \Sigma x^2 + x \xrightarrow{\times 2} -4f(x) + Cf(x) = 2x^2 + 2x$$

$$\oplus \quad \quad \quad -8f(x) + 5Cf(x) = 4x^2 + 2x$$

$$-3f(x) = 4x^2 + 2x$$

$$f(x) = -\frac{4}{3}x^2 - \frac{2}{3}x$$

$$(x+2)f(x) - Cxf(x+2) = \Sigma x^2 - mx + Cn - 1$$

$$x = -2 \rightarrow 4f(0) = 12 + 2m + Cn - 1 \rightarrow 4f(0) = 12 + 2m \quad \textcircled{I}$$

$$x = 0 \rightarrow 2f(0) = Cn - 1 \rightarrow 4f(0) = 2Cn - 2 \quad \textcircled{II}$$

$$\textcircled{I}, \textcircled{II} \Rightarrow 2m + 12 = 2Cn - 2 \rightarrow 2m = 2Cn - 14 \rightarrow m = Cn - 7$$

$$\textcircled{I} \quad 4f(0) = 12 + 2(Cn - 7) \rightarrow 4f(0) = 12 + 2Cn - 14 \rightarrow 4f(0) = 2Cn - 2 \rightarrow f(0) = \frac{Cn - 1}{2} = 6125$$

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

$$x = -1 \rightarrow 2f(-1) = -(C + 12 + C) = -12 \rightarrow f(-1) = -6$$

$$f(x) = (x-1)\sqrt{1-x} \rightarrow x \leq 1 \quad \Rightarrow D_f = D_g$$

$$g(x) = -\sqrt{(1-x)^3} \rightarrow x \leq 1$$

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$$f(x) = x\sqrt{x} \rightarrow x \geq 0, \quad f(x) = \sqrt{x^2} \sqrt{x} = \sqrt{x^3}$$

$$g(x) = \sqrt{x^3} \rightarrow x \geq 0$$

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$$f(x) = \left[\sqrt{x} - \lfloor \sqrt{x} \rfloor \right] \rightarrow \lfloor \sqrt{x} \rfloor \leq \sqrt{x} \rightarrow \left[\sqrt{x} - \lfloor \sqrt{x} \rfloor \right] \geq 0$$

$$g(x) = \sqrt{x - |x|} \rightarrow x \geq 0 \Rightarrow g(x) = 0$$

$$g(x) = f(x) = 0$$

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$$f = \{(1,2), (2,1), (3,1), (0,0)\} \quad g = \{(-1,1), (1,1), (2,5), (5,5), (0,2), (5,1)\}$$

$$الف) \left(\frac{f+g}{f-g} \right)_{(1)} \rightarrow \left\{ \begin{matrix} f_{(1)} = 2 \\ g_{(1)} = 1 \end{matrix} \right\} \Rightarrow \frac{2+1}{2-1} = 3$$

$$ب) \left(\frac{f+g}{f-g} \right)_{(2)} \rightarrow \left\{ \begin{matrix} f_{(2)} = 1 \\ g_{(2)} = 5 \end{matrix} \right\} \Rightarrow \frac{1+5}{1-5} = \frac{6}{-4} = -\frac{3}{2} \rightarrow \text{تعریف نشده}$$

$$ج) f_{(0)} g_{(-1)} \rightarrow \left\{ \begin{matrix} f_{(0)} = 0 \\ g_{(-1)} = 1 \end{matrix} \right\} \Rightarrow 0 \times 1 = 0$$

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$$f(x) = \{(2,1), (-1,2), (0,5), (-2,2), (2,-1)\}$$

$$الف) g(x) = f(x_{n-1}) \rightarrow \{(1,1), (0,2), (\frac{1}{2}, 5), (\frac{1}{2}, 2), (\frac{2}{5}, -1)\}$$

$$ب) h(x) = f(|x|) \rightarrow \{(\pm 2, 1), (-1, 2), (0, 5), (-2, 2), (\pm 2, -1)\}$$

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