

- ۶

$$f(x) = (x-1)\sqrt{1-x} \rightarrow (-\infty, 1]$$

$$g(x) = -\sqrt{(1-x)^3} \rightarrow (-\infty, 1]$$

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$$f(x) = x\sqrt{x} \rightarrow [0, +\infty)$$

$$g(x) = \sqrt{x^3} \rightarrow [0, +\infty)$$

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$$\frac{5\sqrt{5}}{\sqrt{125}} = \sqrt{125}$$

- ۷

$$f(x) = [\sqrt{x} - \lfloor \sqrt{x} \rfloor] \rightarrow [0, +\infty)$$

$$g(x) = \sqrt{x - \lfloor x \rfloor} \rightarrow [0, +\infty)$$

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$$f(2) = 0$$

$$g(2) = 0$$

- ۸

$$الف) \left(\frac{f+g}{f-g} \right)(1) = \frac{1+2}{2-1} = 3$$

$$ب) f(0)g(-1) = 0$$

$$ب) \frac{f+g}{f-g}(2) = \frac{f+g}{2-3}$$

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$$الف) f(3x-1) \Rightarrow \left\{ (0, 4), \left(\frac{1}{3}, 5\right), (0, 2), (1, 1), \left(\frac{4}{3}, -1\right), \left(\frac{7}{3}, -1\right) \right\}$$

- ۱۰

$$ب) f(|x|) = \left\{ (2, 1), (-2, 1), (0, 5), (3, -1), (-3, -1) \right\}$$

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$$2f(\omega) = f(-2) + a \quad \hookrightarrow \quad |fa + 1f = fa - f \quad \hookrightarrow \quad a = -11 \quad a = -\frac{9}{\Delta} \quad \text{✓}$$

$$f(2-\sqrt{3}) + f(2+\sqrt{3}) = 9$$

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

$$(2-\sqrt{3})(2+\sqrt{3}) = 1 \quad \left(\begin{array}{l} \text{✓} \\ = \sqrt{4-3} + 2 \end{array} \right) \quad \text{✓}$$

$$\text{در تمام جواب می دهند} \quad \hookrightarrow \quad f(2-\sqrt{3}) = f(2+\sqrt{3})$$

$$\hookrightarrow 2 \times (\sqrt{3} + 2) \quad \text{✓}$$

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

$$2f(x) - 3f(-x)$$

$$2f(-x) - 3f(x) = 4x^2 + x \quad \rightarrow \quad + \quad \begin{array}{l} = f, \Delta f(x) + 3f(x) \\ - 2, \Delta f(x) = 10x^2 + \frac{1}{4}x \end{array}$$

$$\rightarrow f(x) = -\frac{1}{2}x^2 + \frac{1}{8}x \quad \text{✓}$$

$$x = -2$$

$$5f(0) = 14 + 2m + 3m - 1$$

$$2f(0) = 3m - 1$$

$$x = 0$$

$$9m - 2 = 2m + 12$$

$$m = 1, 2$$

$$\frac{f, \Delta \times 3 - 1}{2} = 6, 2 \quad \text{✓}$$

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

$$f(x) = ax + b$$

$$f\left(\frac{1}{x}\right) = \frac{a}{x} + b$$

$$\frac{a}{x} + ax + 2b = -3x + \frac{3}{x} - 12 \quad \text{✓}$$

$$a = +3$$

$$b = -2$$

$$f(x) = 3x - 2 \rightarrow f(-1) = -9$$

$$f(-1) = 3(-1) - 2 = -5 \quad \text{✗}$$

$$x = -1 \rightarrow f(-1) + f(-1) = \frac{3(-1)^2 + 12 + 3}{-1} = -12 \rightarrow \boxed{f(-1) = -9} \quad (a)$$

البته می توانیم عبارت $f(x) = ax + b$ را بنویسیم

$$f(x) + f\left(\frac{1}{x}\right) = ax + b + \frac{a}{x} + b = \frac{ax^2 + bx + a + bx}{x} = \frac{3x^2 - 12x + 3}{x} \quad \begin{array}{l} \int a = 3 \\ \int b = -2 \end{array}$$

$$f(x) = 3x - 2 \rightarrow \boxed{f(-1) = -9}$$