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

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

$$x_1 \times x_2 = (2+\sqrt{3})(2-\sqrt{3}) = 4-3=1$$

$$x_2 = \frac{1}{x_1}$$

$$f(x_1) = \sqrt{x_1} + \frac{1}{\sqrt{x_1}} + 2 = \sqrt{x_1} + \sqrt{x_2} + 2$$

$$S = \sqrt{2+\sqrt{3}} + \sqrt{2-\sqrt{3}}$$

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

$$f(x_2) = \sqrt{x_2} + \frac{1}{\sqrt{x_2}} + 2 = \sqrt{x_2} + \sqrt{x_1} + 2$$

$$f(2+\sqrt{3}) = \sqrt{2+\sqrt{3}} + \frac{1}{\sqrt{2+\sqrt{3}}} + 2 \xrightarrow{\text{عاجز}} \sqrt{2+\sqrt{3}} + \sqrt{2-\sqrt{3}} + 2$$

$$S^2 = 4 + 2\sqrt{3} = 4$$

در زبان دهستانی

$$f(a) = (a+1)(2+\sqrt{3}) = \sqrt{3}(a+1) = \sqrt{3}a + \sqrt{3}$$

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$$f(-2) = 3a + 2(-2) = 3a - 4$$

$$2(\sqrt{3}a + \sqrt{3}) = (3a - 4) + 0$$

$$13a + 12 = 3a - 4 \quad 10a = -16 \quad a = -\frac{16}{10} = -\frac{8}{5}$$

$$(x+2)f(x) - 2xf(x+2) = 4x^2 - m_1x + 2m - 1$$

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$$(0+2)f(0) - 2f(0)f(2) = f(0)^2 - m(0) + 2m - 1$$

$$4f(0) = 2m - 1 \rightarrow 2f(0) = m - \frac{1}{2}$$

$$(-2+2)f(-2) - 2f(-2)f(0) = f(-2)^2 - m(-2) + 2m - 1$$

$$4f(0) = 12 + 2m + 2m - 1 \quad 4f(0) = 4m + 11$$

$$4m - 2 = 4m + 11$$

$$-2 = 11 \rightarrow m = \frac{9}{2}$$

$$2f(0) = 2\left(\frac{9}{2}\right) - 1 \rightarrow f(0) = \frac{9-1}{2} = 4$$

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

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

$$\int 2f(x) - 2f(-x) = \int x^2 - x$$

$$\int -2f(x) + 2f(-x) = \int x^2 + x$$

$$\begin{cases} f(x) - 2f(-x) = x^2 - x \\ -2f(x) + 2f(-x) = x^2 + x \end{cases}$$

$$\begin{cases} f(x) - 2f(-x) = x^2 - x \\ -2f(x) + 2f(-x) = x^2 + x \end{cases}$$

$$-5f(x) = 2x^2 + x$$

$$f(x) = -\frac{2x^2 + x}{5}$$

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

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$$g(x) = \sqrt{(1-x)^2}$$

$$1-x \geq 0 \rightarrow x \leq 1 \rightarrow D_f(-\infty, 1]$$

$$(1-x)^2 \geq 0 \rightarrow 1-x \geq 0 \rightarrow x \leq 1$$

$$D_g(-\infty, 1] \rightarrow (D_f \cap D_g)$$

✓ بلایز

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

$$f\left(\frac{1}{x}\right) + f(x) = \left(\frac{a}{x} + b\right) + (ax + b) = 2b + \frac{a}{x}$$

$$f\left(\frac{1}{x}\right) + f(x) = \frac{ax^2 + 2bx + a}{x}$$

$$\frac{ax^2 + 2bx + a}{x} = \frac{3x^2 - 12x + 3}{x}$$

$$a = 3 \quad b = -4 \quad f(x) = 3x - 4$$

$$f(-1) = 3(-1) - 4 = -3 - 4 = -7$$

$$f(x) = [\sqrt{x} - \lfloor \sqrt{x} \rfloor]$$

$$g(x) = \sqrt{x - \lfloor x \rfloor}$$

$$D_f = [0, +\infty)$$

$$x - \lfloor x \rfloor \geq 0 \rightarrow D_g = \mathbb{R}$$

برابر نیست

$$f(x) = x\sqrt{x}$$

$$g(x) = \sqrt{x^2}$$

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$$f: x \geq 0 \rightarrow D_f = [0, +\infty)$$

$$x^2 \geq 0 \rightarrow x \geq 0 \rightarrow D_g = [0, +\infty)$$

$$f(x) = x\sqrt{x} = \sqrt{x^2}\sqrt{x} = \sqrt{x^3}$$

برابر

$$2.) f(0) = 0$$

$$g(-1) = 1$$

$$0 \times 1 = 0$$

$$\frac{f+g}{f-g}(1) = \frac{f(1) + g(1)}{f(1) - g(1)} = \frac{1+1}{1-1} = \text{undefined}$$

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$$\cup f(2) = 2, g(2) = 2 \quad \left(\frac{f+g}{-g} \right)(2) = \frac{2+2}{-2} = \frac{4}{-2} = -2$$

تغییر نشود برای برابر شدن

$$D_f = \{x, -1, 0, -x, 2\}$$

این

$$x-1=2 \rightarrow x=3 \rightarrow x = \frac{9}{4}$$

$$g(\frac{9}{4}) = f(2) = 1 \rightarrow (\frac{9}{4}, 1)$$

$$x-1=-1 \rightarrow x=0 \rightarrow x=0 \rightarrow g(0) = f(-1) = 2 \rightarrow$$

$$(0, 2)$$

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

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

$$x-1=2 \rightarrow x=3 \rightarrow x=2$$

$$g(2) = f(2) = -1 \rightarrow 2, -1$$

$$S = \{(\frac{9}{4}, 1), (0, 2), (-\frac{1}{4}, 2), (\frac{1}{4}, 0), (2, -1)\}$$

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ب)

$$|x| = 0 \rightarrow x = 0 \rightarrow h(0) = f(0) = 0 \rightarrow (0, 0)$$

$$|x| = r \rightarrow x = \pm r \rightarrow h(r) = f(r) = 1 \rightarrow (r, 1)$$

$$x = -r \rightarrow h(-r) = f(r) = 1 \rightarrow (-r, 1)$$

$$|x| = r \rightarrow x = \pm r$$

$$x = r \rightarrow h(r) = f(r) = -1 \rightarrow (r, -1)$$

$$x = -r \rightarrow h(-r) = f(r) = -1 \rightarrow (-r, -1)$$

$$h = \{ (0, 0), (r, 1), (-r, 1), (r, -1), (-r, -1) \}$$
