

$$f(x) = \begin{cases} (a+1)(x+2) & x > 1 \\ 3a + 2x & x \leq 1 \end{cases}$$

$$2f(1) = f(-1) + a \rightarrow 2(3a+2) = 3a-1+a \rightarrow 6a+4 = 4a-1 \rightarrow 2a = -5 \rightarrow a = -5/2$$

$$a = -5/2$$

1

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

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

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

$$\frac{2\sqrt{2}}{\sqrt{2}} + 4 \rightarrow 2\sqrt{2} + 4$$

2

$$\rightarrow 2f(x) - 3f(-x) = 5x^2 - x \xrightarrow{\times 2} 4f(x) - 6f(-x) = 10x^2 - 2x$$

$$\rightarrow 2f(-x) - 3f(x) = 5x^2 + x \xrightarrow{\times 3} 6f(-x) - 9f(x) = 15x^2 + 3x$$

$$-5f(x) = 10x^2 + x \rightarrow f(x) = -2x^2 - \frac{x}{5}$$

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$$(x+2)f(x) - 3xf(x+2) = 5x^2 - mx + 3m-1$$

$$\frac{1\omega + 2\omega m}{3} = \frac{3m-1}{3}$$

$$x \rightarrow -2 \Rightarrow -3(-2)f(0) = 14 + 2m + 3m - 1 \rightarrow 6f(0) = 13 + 5m$$

$$x \rightarrow 0 \Rightarrow 2f(0) = 3m - 1 \rightarrow f(0) = \frac{3m-1}{2}$$

$$f(0) = \frac{13}{2}$$

$$\frac{9m-3}{2} = \frac{13+5m}{2} \rightarrow 9m-3 = 13+5m \rightarrow 4m = 16 \rightarrow m = 4$$

$$f(0) = \frac{1\omega + 2\omega m}{3}$$

$$f(x) + f\left(\frac{1}{x}\right) = \frac{3x^2 - 12x + 3}{x}$$

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

$$f(-1) =$$

$$\frac{ax^2+bx+a}{x} \rightarrow \begin{cases} a=3 \\ b=-9 \end{cases}$$

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

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$f(x) = (x-1)\sqrt{1-x} \rightarrow \sqrt{(x-1)^2(1-x)} = \sqrt{(1-x)^3} \rightarrow x \leq 1$ $g(x) = -\sqrt{(1-x)^3} \rightarrow D_f \subset \mathbb{R}$ X تساوی	۶
$f(x) = x\sqrt{x} \rightarrow x \geq 0$ $g(x) = \sqrt{x^3} \rightarrow x \sqrt{x}$ ↓ $D_f = [0, +\infty)$ ✓ تساوی	۷
$f(x) = [\sqrt{x} - [\sqrt{x}]] \xrightarrow{x \geq 0} [\sqrt{x}] - [\sqrt{x}] = 0$ $g(x) = \sqrt{x - x } \rightarrow x - x \geq 0 \rightarrow x \leq x \rightarrow [0, +\infty) \rightarrow 0 \text{ تابع}$ ✓ تساوی	۸
$g = \{(\sqrt{5}, 1), (-1, 1), (2, 3), (3, 2), (0, 2)\} \quad f = \{(1, 2), (2, 3), (3, 1), (0, 0)\}$ الف) $\left[\frac{f+g}{f-g}\right](1) \rightarrow \frac{2+1}{2-1} = 3$ ب) $\left[\frac{f+g}{f-g}\right](2) \rightarrow \frac{2+3}{3-2} = \frac{5}{1} = 5$ تغییر ج) $f(0)g(-1) \rightarrow 0 \times 1 = 0$	۹
$g(x) = f(x-1) \rightarrow g = \left\{ \left(\frac{1}{2}, 1\right), (0, 2), \left(\frac{1}{3}, 0\right), \left(-\frac{1}{2}, 2\right), \left(\frac{4}{3}, -1\right) \right\}$ $x-1 = 2 \rightarrow 1 \quad x-1 = -2 \rightarrow -\frac{1}{2}$ $x-1 = 1 \rightarrow 0 \quad x-1 = 2 \rightarrow \frac{4}{3}$ $x-1 = 0 \rightarrow \frac{1}{2} \quad x-1 = 3 \rightarrow \frac{4}{3}$ $h(x) = f(x) \rightarrow h = \{(2, 1), (-2, 1), (0, 0), (3, -1), (-3, -1)\}$	۱۰