

$$x^2 f(x+1) > 0$$

$$f(x+1) > 0$$

$$\frac{1}{x} - 1 > 0$$

$$\frac{1}{x} > 1$$

$$x-1 \leq 0$$

$$x \leq 1$$

$$x^2 > 0$$

$$x > 0$$

x	0	1
y	-	+

$$D = [0, 1]$$

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

$$-x + |2-x| > 0$$

$$|2-x| > x$$

$$x > 2 \rightarrow x-2 > x \quad -2 > 0 \quad \times \text{ غلط}$$

$$x < 2 \rightarrow 2-x > x \quad 2 > 2x \quad \sqrt{2} < x \leq \sqrt{2}$$

$$D = [2, +\infty) \cap [-\sqrt{2}, \sqrt{2}] = [-\sqrt{2}, \sqrt{2}]$$

$$D_f = [-2, 3]$$

x	-2	1	2	3
x+1	-	0	+	+
f(x)	+	0	-	+
y	-	+	-	+

$$D = (-2, 1] \cup (2, 3)$$

$$4x^2 - 7x^2 - f(x-3) = (3x^2 - x - 3) \left(\frac{3x^2 + x + 1}{\Delta < 0} \right) = 0$$

$$3x^2 - x - 3 = 3x^2 + ax + b$$

$$a = -1$$

$$b = -3$$

$$\sqrt{-(a+b)} = \sqrt{-(-1-3)} = \sqrt{4} = 2$$

$$f(x) - f\left(\frac{x}{2}\right) > 0$$

$$\frac{x^2 + x^2 - f(x^2 - 4x^2)}{x^2} > 0$$

x	-2	0	2
y	-	+	-

$$D = [-2, 0) \cup [2, +\infty)$$

$$\frac{x^2 + x^2 - 4x^2 - 4x^2}{x^2} > 0$$

$$x^2 + x^2 - 4x^2 - 4x^2 = 0$$

$$x = \pm 2$$

$$x^2 = 0$$

$$x = 0$$

$$f_{(1^2+1)} + f_{(1^2+2)} = 1(1)^2 - 1 + 1(1)^2 - 1 = 10 - 2 = \boxed{8}$$

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$$g(\sqrt{v}-3) = (\sqrt{v}-3)^3 + 9(\sqrt{v}-3)^2 + 12(\sqrt{v}-3) = v - 2v - 9\sqrt{v} + 9 + 12\sqrt{v} + 36 - 36 - 36 = -20$$

$$f(\sqrt{v}+2) = (\sqrt{v}+2)^3 - 6(\sqrt{v}+2)^2 + 12(\sqrt{v}+2) = \dots = 10$$

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$$\frac{g(\sqrt{v}-3)}{f(\sqrt{v}+2)} = \frac{-20}{10} = \boxed{-2}$$

$$(f(x) + g(x))^2 = x^2 - 4x + 4 + x^2 + 4x - 4 + 2\sqrt{x^2 - 4x + 4} = 2x^2 + 2\sqrt{(x-2)^2}$$

$x > 2 \rightarrow 2x^2 + 2x - 4 = 4x - 4 \Rightarrow f(x) + g(x) = \sqrt{4(x-1)} = 2\sqrt{x-1}$ ✓ ق ق
 $x < 2 \rightarrow 2x^2 - 4x + 4 \Rightarrow f(x) + g(x) = \sqrt{4} = 2$ ✗ ق ق

با صورت سوال مطابقت ندارد
و قیاس ثابت می دهد.

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$$\begin{aligned} a &= 0 \\ b &= 2 \\ c &= -4 \end{aligned} \quad \frac{a+b}{c} = \frac{0+2}{-4} = \boxed{-\frac{1}{2}}$$

$$\begin{aligned} x^2 - 4x + 3 &\neq 0 \\ (x-3)(x-1) &\neq 0 \\ x &\neq 1, 3 \end{aligned} \quad \frac{g(x)}{f(x)} = \frac{1}{-4} \quad \frac{g(0)}{f(0)} = \frac{\frac{1}{4}}{\frac{1}{3}} = \frac{3}{4}$$

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

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

$$ب) f(x^2) = \left\{ (\sqrt{2}, 2), (-\sqrt{2}, 2), (\sqrt{6}, 6), (-\sqrt{6}, 6) \right\}$$

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

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

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