

$$x f(x) \geq 0 \quad \begin{cases} x \text{ متی} - f(x) \text{ متی} - & -5 \leq x \leq 0 \\ x \text{ متی} - f(x) \text{ متی} & 4 \leq x \leq 5 \end{cases} \Rightarrow D_f = [-5, 0] \cup [4, 5]$$

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$$\frac{-x}{f(x)} \geq 0 \quad \frac{x}{f(x)} \leq 0 \quad \begin{cases} x \text{ متی}, f(x) \text{ متی} - & 0 \leq x \leq 4 \\ x \text{ متی}, f(x) \text{ متی} & -4 \leq x \leq 0 \end{cases} \Rightarrow 0, 4, -1, -2, -3$$

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$$f(x) - 2f(x) = x^2 - 4x + 4 \quad f(-2) = ?$$

$$\Rightarrow f(x) - 2f(x) = 4 \quad f(x) = -2$$

$$f(x) - 2(-2) = x^2 - 4x + 4 \quad f(x) = x^2 - 4x$$

$$f(-2) = (-2)^2 - 4(-2) = 12 \quad \boxed{f(-2) = 12}$$

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$$f(x) = \begin{cases} x - \sqrt{x+4} & x > 4 \\ 4x + 2 & x \leq 4 \end{cases}$$

$$f(f(5)) = f(f(1)) = 9$$

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$$f(5) = 5 - \sqrt{9} = 2 \quad f(4) = 18$$

$$f(f(1)) \rightarrow f(1) = 6 \quad f(5) = 2$$

$$f(x-1) - f(x) = 4x+2 \Rightarrow f(x-1) = a(x-1)^2 - b(x-1) + 2 = a(x^2 - 2x + 1) - bx + b + 2$$

$$f(x) = ax^2 - bx + 2 \quad ax^2 - 2ax + a - bx + b + 2$$

$$f(x-1) - f(x) = ax^2 - 2ax + a - bx + b + 2 - ax^2 + bx - 2$$

$$-2ax + a + b = 4x + 2$$

$$-2a = 4 \quad a = -2$$

$$-2 + b = 2 \quad b = 4$$

$$a \cdot b = -2 \cdot 4 = -8$$

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$$f(n) = n^2 - 2n + 1$$

$$\frac{f(x) - f(-x)}{f'(x)} = \frac{V}{1} = \boxed{V}$$

$$f'(x) = 2(x - 1) = 2$$

$$f(-1) = 1 + 2 + 1 = 4$$

$$f'(x) = (-1)^2 = 1$$

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$$\frac{f(x) - f(-x)}{f'(x)} =$$

$$f(x) = x(1-x) = x - x^2$$

$$f(-x) = (-x)(1-x) = -x + x^2$$

$$f'(x) = x(1-x) = x - x^2$$

$$\frac{x - x^2 - (-x + x^2)}{x - x^2} = \frac{x - x^2 + x - x^2}{x - x^2} = \frac{2x - 2x^2}{x - x^2} = \frac{2(1-x)}{1-x} = \boxed{2}$$

$$f(n) = \begin{cases} n+1 & n \geq 1 \\ n^2 & n < 1 \end{cases}$$

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$$f = \{(1, 4), (2, 3), (3, 1), (4, 2)\}$$

$$\frac{f(f(x)) - f(f(y))}{f'(x) - y} = \frac{0}{4} = 0$$

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$$f(n) = \frac{(n+1)^2 - 1}{n^2 + 2n + 1}$$

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

$$n = \sqrt{x} - 1 \quad n+1 = \sqrt{x} \rightarrow (n+1)^2 - 1 \rightarrow (\sqrt{x})^2 - 1 = x - 1 \rightarrow -1 + 4 = 3$$

$$n^2 + 2n + 1 \rightarrow (n+1)^2 = (\sqrt{x})^2 = x \rightarrow x - 1 + 4 = 3$$

$$f(x) = \frac{3 + 4 + 4}{3 + 4 + 4} = \frac{11}{11} = \boxed{1}$$

$$\frac{1}{x} = 2$$

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$$f(n) = n^2 + \frac{1}{n^2}$$

$$(f(\sqrt{n}))^2 - f(n) =$$

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

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

$$(f(\sqrt{n}))^2 - f(n) = n^2 + 2 + \frac{1}{n^2} - n^2 - \frac{1}{n^2} = \boxed{2}$$

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