

$$y = \sqrt{x} f(x) \Rightarrow x f(x) \geq 0 \Rightarrow f(x) \geq 0 = [-2, -1] \cup [0, 4]$$

$$\Rightarrow f(x) \leq 0 = [-9, -6] \cup [-2, 0]$$

$$[0, 4] \Leftarrow f(x) \geq 0 \Leftarrow x \geq 0 \text{ وقتی}$$

$$[-9, -6] \cup [-2, 0] \Leftarrow f(x) \leq 0 \Leftarrow x < 0 \text{ وقتی}$$

$$D = [-9, -6] \cup [-2, 0] \cup [0, 4]$$

$$f(x)^+ \Rightarrow (-4, -4) \cup (-2, 0) \cup (2, 4)$$

$$f(x)^- \Rightarrow (-4, -2) \cup (0, 2)$$

~~$$D = (-4, -4) \cup (-2, 0) \cup (2, 4)$$~~

$$f(x) < 0 \Leftarrow \text{آر } x < 0 \Leftarrow \text{صورت منفی می شود}$$

$$f(x) > 0 \Leftarrow \text{آر } x < 0 \Leftarrow \text{" مثبت "}$$

$$\{-5, -3, -1, 1\} \Leftarrow \text{اعداد صحیح}$$

$$f(2) = (-2)^2 - 3(-2) + 4 = 4 + 6 + 4 = 14$$

$$f(2) = (2)^2 - 3(2) + 4 = 4 - 6 + 4 = 2$$

$$f(2) - 2f(2) = 14 - 2(2) = 14 - 4 = 10$$

$$f(5) = 5 - \sqrt{5+4} = 5 - 3 = 2$$

$$f(f(5)) = f(2) = 2(2) + 3 = 4 + 3 = 7$$

$$f(1) = 2(1) + 3 = 2 + 3 = 5$$

$$f(f(1)) = f(5) = 2$$

$$f(f(5)) + f(f(1)) = 7 + 2 = 9$$

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

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

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

$$\Rightarrow a - b = -2 - 5 = -7$$

$$(\sqrt{3}-2)^2 = 3 - 4\sqrt{3} + 4 = 7 - 4\sqrt{3}$$

$$x^2 + 4x = (7 - 4\sqrt{3}) + (4\sqrt{3} - 8) = -1$$

$$x^2 + 4x + 4 = -1 + 4 = 3$$

$$x^2 + 4x + 7 = -1 + 7 = 6$$

$$f(\sqrt{3}-2) = \frac{6}{4} = \boxed{\frac{3}{2}}$$

$$x - \frac{1}{x} = -3$$

$$\left(x - \frac{1}{x}\right)^2 = 9 \Rightarrow x^2 - 2 + \frac{1}{x^2} = 9 \Rightarrow x^2 + \frac{1}{x^2} = 9 + 2 = 11$$

$$f\left(x - \frac{1}{x}\right) = x^2 + \frac{1}{x^2} \Rightarrow f(-3) = x^2 + \frac{1}{x^2} = 11$$

$$f(0) = 2, g(0) = \sqrt{9} = 3$$

$$\frac{f}{g}(0) = \frac{2}{3}, \frac{g}{f}(0) = \frac{3}{2}$$

$$f(1) = -4, g(1) = \sqrt{8} = 2\sqrt{2}$$

$$\frac{f}{g}(1) = -\sqrt{2}, \frac{g}{f}(1) = \frac{-\sqrt{2}}{2}$$

$$f(2) = 0, g(2) = \sqrt{5}$$

$$\frac{f}{g}(2) = \frac{0}{\sqrt{5}} = 0, \frac{g}{f}(2) = \frac{\sqrt{5}}{0} = \text{تعریف نشده}$$

$$\frac{f}{g} = \left\{ \left(0, \frac{2}{3}\right), (1, -\sqrt{2}), (2, 0) \right\}$$

$$\frac{g}{f} = \left\{ \left(0, \frac{3}{2}\right), \left(1, -\frac{\sqrt{2}}{2}\right) \right\}$$

$$\left\{ (2, 4), (3, 49), (-5, 13), (1, 13) \right\}$$

$$\left\{ (1, 1), \left(\frac{3}{4}, 4\right), (-2, 5), (0, 5), (-2, -1) \right\}$$

$$\left\{ (2, 2), (3, 8), (-5, 4), (1, -4) \right\}$$

$$\left\{ (2, 2), (3, 5), (-5, 3), (1, -1) \right\}$$

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

$$\frac{2f}{g} = \left\{ (2, 4), (3, -2) \right\} \quad (\text{تعریف نشده } x=1)$$