

$$x f(x) \geq 0 \Rightarrow x \text{ و } f(x) \rightarrow \text{هم علامت} \quad | \quad x=0 \quad | \quad f(x)=0 \Rightarrow D_f = [-\infty, 0] \cup [2, \infty] \quad (1)$$

$$\frac{-x}{f(x)} \geq 0, f(x) \neq 0 \Rightarrow x \neq -3, 0, 2, \infty \quad | \quad -x \text{ و } f(x) \rightarrow \text{هم علامت} \Rightarrow x \text{ و } f(x) \rightarrow \text{خلاف علامت} \quad (2)$$

$$D_f = (-3, 0) \cup (0, 2) \rightarrow -2, -1, 1 \rightarrow \boxed{63} \rightarrow \text{جواب}$$

$$x=2 \rightarrow f(x) - 2f(x) = f(x) - 2f(x) = -f(x) = x - y + x = 2 \rightarrow f(x) = -2 \quad (3)$$

$$f(-x) - 2f(x) = x + y + x = 1x \rightarrow f(-x) = 1 \quad (4)$$

$$f(1) = 2x + 3 = \infty \rightarrow f(\infty) = \infty - \sqrt{\frac{\infty + x}{3}} = 2 \quad f(x) = x + 3 = 7 \rightarrow 7 + 2 = 9 \quad (5)$$

$$f(x-1) = \frac{a(x-1)^2 - b(x-1) + 2}{x^2 + 1 - 2x} = ax^2 + a - 2ax - bx + b + 2 \quad (6)$$

→ ادامه صفحی بعد

-1 = جواب ←

$$a x^2 + a - 2ax - bx + b + x - ax^2 + bx - x = 4x + 2 / a - b = -2 - a = -1 \quad (5)$$

$$\Rightarrow a + b - \frac{2ax}{4} = 4x + 2 \rightarrow -2a = 4 \rightarrow \boxed{a = -2}, -2 + b = 2 \rightarrow \boxed{b = 4}$$

$$\frac{f(1) + 5}{1} = \boxed{7}$$

$$f(x) = -1 \{ f(x) = 9 - 9 + 1 = 1 \quad (6)$$

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

$$\frac{f(x)}{f(x)} = 1x + 1 = 1x / f(-1) = 1 / f(x) = 1$$

$$\frac{3 \times 13 - 2 \times 1}{1} = \frac{31}{1}$$

(7)

$$\frac{f(f(x)) - f(f(2))}{f(1) - 2} = 0$$

(8)

$$f(\sqrt{3}-2) = \frac{(\sqrt{3}-2)^2 + 2(\sqrt{3}-2) + 9}{(\sqrt{3}-2)^2 + 2(\sqrt{3}-2) + 5} = \frac{3+2-2\sqrt{3}+2\sqrt{3}-1+9}{3+2-2\sqrt{3}+2\sqrt{3}-1+5} = \frac{11}{11} = 1 \quad (9)$$

$$f(x) = \frac{x+1+9}{x+1+5} = \frac{11}{11} \leftarrow \text{جواب}$$

$$f(\sqrt{x}) = x + \frac{1}{x} \rightarrow (x + \frac{1}{x})^2 = x^2 + \frac{1}{x^2} + 2 \rightarrow x^2 + \frac{1}{x^2} + 2 - 2x^2 - \frac{1}{x^2} = 2 \quad (10)$$