

مثال ۲

$$x f(x) \geq 0 \quad \begin{cases} [-5, 0) \rightarrow x \leq 0 \\ \checkmark f(x) < 0 \\ \checkmark x f(x) \geq 0 \end{cases} \quad (0, 2) \quad \begin{cases} x > 0 \\ \times f(x) < 0 \\ \times x f(x) < 0 \end{cases}$$

$[2, 5] \quad x > 0$
 $\checkmark f(x) > 0$
 $x f(x) > 0$

$D_f = [-5, 0) \cup [2, 5]$

$-x \geq 0 \rightarrow x \leq 0 \quad f(x) \neq 0 \quad \begin{cases} (-4, -3) & -x > 0 \\ & f(x) < 0 \\ & \sqrt{\frac{-x}{f(x)}} \times \end{cases}$

$(-3, 0) \quad -x > 0$
 $\checkmark f(x) > 0$
 $\sqrt{\frac{-x}{f(x)}} \checkmark$

$(0, 2) \quad -x < 0$
 $f(x) < 0$
 $\sqrt{\frac{-x}{f(x)}} = \sqrt{\frac{-x}{f(x)}} \times$

$(2, 5) \quad -x < 0$
 $f(x) > 0$
 $\sqrt{\frac{-x}{f(x)}} \times$

$(-3, 0) \cup (0, 2) \quad -2, -1, 1 = \{ \}$

$f(2) \rightarrow f(2) - 2f(2) = 2 - 4 + 2 \rightarrow -f(2) = 2 \rightarrow f(2) = -2$

$f(-2) \rightarrow f(-2) - 2f(2) = 2 + 4 + 2 \rightarrow f(-2) + 2 = 12$
 $f(-2) = 10$

$f(5) \rightarrow 5 - \sqrt{5+2} = 2 \rightarrow f(f(5)) \rightarrow f(2) = 2$
 $\sqrt{9} = 3$

$f(1) \rightarrow 1 \rightarrow f(f(1)) \rightarrow f(1) = 2$

$f(f(5)) + f(f(1)) = 2 + 2 = 4$

$f(n-1) = a(n-1)^2 - b(n-1) + 2 = a(n^2 - 2n + 1) - bn + b + 2$

$an^2 - 2an + a - bn + b + 2 \Rightarrow f(n-1) - f(n)$

$an^2 - 2an + a - bn + b + 2 - (an^2 - bn + 2) \Rightarrow -2an + a + b$
 $-an^2 + bn - 2$

$-2an + a + b = 4n + 2$

$-2a = 4 \rightarrow a = -2$

$a + b = 2$

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

$a - b = -6$

$$F(3) = 9 - 9 + 1 = 1 \rightarrow F(1) = 1$$

$$\frac{1+9}{1} = 10$$

$$F(-1) = 1 + 1 + 1 = 3$$

$$F(2) = 4 - 4 + 1 = 1 \rightarrow F(1) = 1$$

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$$F(4) = 16 - 4 + 1 = 13 \rightarrow F(13) = 169$$

$$\frac{169 - 1}{13} = \frac{168}{13}$$

$$F(-2) = (-2)^2 = 4 \rightarrow -2F(-2) = -8$$

$$F(2) = 4$$

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$$F(4) = 1 \rightarrow F(F(4)) = F(1) = 4$$

$$\frac{4-4}{4-2} = \frac{0}{2} = 0$$

$$F(3) = 2 \rightarrow -F(F(3)) = -F(2) = -4$$

$$F(1) = 4$$

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$$F(\sqrt{3}-2) \rightarrow (\sqrt{3}-2)^2 + 4(\sqrt{3}-2) + 9 \Rightarrow 3 + 4 - 4\sqrt{3} + 4\sqrt{3} - 8 + 9 = 8$$

$$F(\sqrt{3}-2) \rightarrow (\sqrt{3}-2)^2 + 4(\sqrt{3}-2) + 9 \Rightarrow 3 + 4 - 4\sqrt{3} + 4\sqrt{3} - 8 + 9 = 8$$

$$\frac{8}{2} = 4 \rightarrow F(F(\sqrt{3}-2)) \rightarrow F(2) = \frac{4+8+9}{4+8+9} = \frac{21}{21} = 1$$

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$$F(\sqrt{n}) \Rightarrow (\sqrt{n})^2 + \frac{1}{(\sqrt{n})^2} = n + \frac{1}{n} \rightarrow \left(n + \frac{1}{n}\right)^2 = n^2 + \frac{1}{n^2} + 2$$

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

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