

$$y = \sqrt{x f(x)} \Rightarrow x f(x) \geq 0 \xrightarrow{\text{در واقع}} x \text{ در ربع اول و سوم هم علامت هستند} \Rightarrow [-5, 0] \cup [2, 5]$$

$$x \rightarrow 0, +$$

$$f(x) \rightarrow 0, +$$

نمودار علامت:

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$$y = \sqrt{\frac{-x}{f(x)}} \Rightarrow \frac{-x}{f(x)} \geq 0 \xrightarrow{\text{در واقع}} \frac{-x}{f(x)} = 0 \Rightarrow x = 0 \text{ یا } f(x) = 0 \Rightarrow (-2, 0) \cup (0, 2)$$

نمودار علامت:

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

$$f(x) - 2f(-2) = x^2 - 3x + 4 \Rightarrow f(x) + 4 = x^2 - 3x + 4 \Rightarrow f(-2) = 4 + 4 = 8$$

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$$f(f(5)) + (f(f(1)))^2 \Rightarrow 5 + 2 = 7$$

$$f(x) = \begin{cases} x - \sqrt{x+4} \Rightarrow x > 2 \\ 2x + 3 \Rightarrow x \leq 2 \end{cases}$$

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

$$f(5) = 2$$

$$f(5) = 5 - 2 = 3$$

$$f(2) = 7$$

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$$f(x-1) - f(x) = 4x + 2 \quad f(x) = ax^2 + bx + 2 \Rightarrow$$

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

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

$$\Rightarrow \begin{cases} -2a = 4 \\ a + b = 2 \end{cases} \Rightarrow \begin{cases} a = -2 \\ b = 4 \end{cases}$$

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$\frac{x^r + (x + \omega)}{x^r + (x + \nu)} = \frac{(x + r)^r + 1}{(x + r)^r + r} \Rightarrow \frac{(\sqrt{r} - x + x)^r + 1}{(\sqrt{r} + x - x)^r + r} = \frac{r + 1}{r + r} = \frac{r}{2} = \frac{r}{r} = 0,999$	✓ 9
$\frac{x^r + 1}{x^r} = x^r + \frac{1}{x^r} \Rightarrow f(x - \frac{1}{x}) = (x - \frac{1}{x})^r + r \Rightarrow x - \frac{1}{x} = A \Rightarrow$ $f(A) = (A)^r + r \Rightarrow f(-r) = (-r)^r + r = 9 + r = 11$	✓ 9
$1) D_f = \{r, 1, 0, \nu\}, D_g = [-r, r] \Rightarrow D_f \cap D_g = \{r, 1, 0\}$ $\frac{f}{g} = \{(r, \frac{0}{\sqrt{\omega}})(1, \frac{-r}{\sqrt{\frac{\omega}{r}}})(0, \frac{r}{r})\} \Rightarrow \{(0, \frac{r}{r})(1, \frac{-r}{\sqrt{\frac{\omega}{r}}})(r, 0)\}$ $2) \frac{g}{f} = \{(\cancel{r}, \frac{\sqrt{\omega}}{0})(1, \frac{\sqrt{\frac{\omega}{r}}}{-r})(0, \frac{r}{r})\}$	✓ 9
$1) r f(x) = \{(r, r)(r, \omega)(-0, r)(1, -r)\}$ $r) r f^r(x) + 1 = \{(r, r)(r, r)(-0, r)(1, r)\}$	$r) f(x) + 1 = \{(r, r)(r, \omega)(-0, r)(1, -1)\}$ $r) f(x) = \{(1, 1)(\frac{r}{r}, r)(-0, r)(\frac{1}{r}, -r)\}$
$f(x) = \{(1, r)(r, r)(r, 1)\}$ $1) f - g = \{(1, r)(r, r)(\cancel{r}, r)\}$ $r) \frac{r f}{g} = \{(\cancel{1}, \frac{r}{r})(r, r)(r, -r)\}$	✓ 10