

$$y = \sqrt{x f(x)}$$

$$x f(x) \geq 0$$

$$\begin{array}{ccccccc} - & - & 0 & + & + & + & + \\ + & \phi & - & \phi & - & \phi & + \end{array}$$

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

$$y = \sqrt{\frac{-x}{f(x)}}$$

$$\frac{-x}{f(x)} \geq 0, f(x) \neq 0$$

$$\begin{array}{ccccccc} - & + & 0 & - & - & - & - \\ \phi & + & \phi & - & \phi & + & \phi \end{array}$$

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$$D_f = (-2, 0) \cup (0, 2)$$

$$[-2, -1, 1] \leftarrow \text{نادرست}$$

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

$$\text{if } x=2 \rightarrow f(2) - 2f(2) = 4 - 4 + 4 = 2$$

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$$\text{if } x=-2 \rightarrow f(-2) - 2(-2) = 4 + 4 + 4 = 12 \Rightarrow f(-2) = 10$$

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

تابعی

$$f(f(5)) + f(f(1))$$

$$\rightarrow f(1) = 2+2=4$$

$$\rightarrow f(5) = 5 - \sqrt{7} = 2$$

$$\rightarrow f(2) = 4+2=6$$

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$$\xrightarrow{\text{نادرست}} f(f(5)) + f(f(1)) = 2+6=8$$

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

$$f(x-1) - f(x) = 4x+2 \text{ ساده}$$

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

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$$\begin{aligned} -2a &= 4 \\ a &= -2 \end{aligned}$$

$$a-b = -2-2 = -4$$

$$\begin{aligned} -2+b &= 2 \\ b &= 4 \end{aligned}$$

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$$\frac{\overbrace{r f(r)}^{r(1)} + f(-1)}{f^r(r)} \Rightarrow \frac{r+1}{(-1)^r} = \frac{r}{1} = \boxed{r}$$

$$\Rightarrow \frac{r+1}{(-1)^r} = \frac{r}{1} = \boxed{r}$$

$$f(n) = n^r - r_{n+1}$$

$$\begin{cases} \rightarrow f(r) = 1 \\ \rightarrow f(-1) = 0 \\ \rightarrow f(r) = -1 \end{cases}$$

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$$\frac{r f(r) - r f(-r)}{f(r)} \Rightarrow \frac{r^2 - 1}{r} = \frac{r-1}{1} = \boxed{r-1}$$

$$\Rightarrow \frac{r^2 - 1}{r} = \frac{r-1}{1} = \boxed{r-1}$$

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

$$\begin{cases} \rightarrow f(r) = r \\ \rightarrow f(-r) = r \\ \rightarrow f(r) = r \end{cases}$$

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$$\frac{f(f(r)) - f(f(r))}{f(1) - r} \rightarrow \frac{0}{f} = \boxed{0}$$

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$$\frac{0}{f} = \boxed{0}$$

$$f = \{(r, r), (r, r), (r, 1), (1, r)\}$$

$$\begin{cases} \rightarrow f(r) = 1 \rightarrow f(1) = r \\ \rightarrow f(r) = r \rightarrow f(r) = r \end{cases} \left. \begin{array}{l} \\ \end{array} \right\} r - r = 0$$

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$$f(f(\sqrt{r}-r))$$

$$\rightarrow n = \sqrt{r} - r \rightarrow n+r = \sqrt{r}$$

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

$$\rightarrow \frac{(n+r)^r + 1}{(\sqrt{r})^r} = \frac{r+1}{r} = r$$

$$\rightarrow f(\sqrt{r}-r) = \frac{r+1}{r} = r$$

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

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$$(f(\sqrt{n}))^r - f(n)$$

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

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

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

$$\Rightarrow n^r + r + \frac{1}{n^r} - n^r - \frac{1}{n^r} = \boxed{r}$$

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