

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

$$\hookrightarrow \hookrightarrow -\infty, 2, \infty$$

$$\begin{array}{ccccccc} -\infty & 0 & 2 & \infty \\ - & + & - & + & - & + & - \end{array}$$

$$D = [-\infty, 0] \cup [2, \infty]$$

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

$$\hookrightarrow \infty, 2, 0, -3$$

$$\begin{array}{ccccccc} -3 & 0 & 2 & \infty \\ - & + & - & + & - & + & - \end{array}$$

$$D = (-3, 0) \cup (0, 2) \cup (2, +\infty)$$

شکل عدد صحیح در نمودار

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$$\text{تعداد اعداد صحیح} = 3$$

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

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

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

$$f(-2) = 10$$

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$$f(1) = \frac{1 < 3}{(1 \times 1) + 3} = \omega$$

$$f(\omega) = \frac{\omega > 3}{\omega - \sqrt{\omega + 4}} = 2$$

$$f(2) = \frac{2 < 3}{(2 \times 2) + 3} = v$$

$$v + 2 = 9$$

$$\left. \begin{array}{l} f(f(1)) = 2 \\ f(f(\omega)) = v \end{array} \right\}$$

$$\left. \begin{array}{l} f(f(1)) = 2 \\ f(f(\omega)) = v \end{array} \right\}$$

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

$$an^2 - 2an + a - bn + b + 2$$

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

$$-2an + (a + b) = 4n + 2 \xrightarrow{n \text{ فریب}} -2a = 4 \Rightarrow a = -2$$

$$a + b = 2 \Rightarrow b = 4$$

$$a - b = -2 - 4 = -6$$

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① $f(x) = \frac{x^r + \epsilon x + \omega}{x^r + \epsilon x + \nu}$ $f(\sqrt{r} - 1) = \frac{r + r - \epsilon\sqrt{r} + \epsilon\sqrt{r} - \lambda + \omega}{r + r - \epsilon\sqrt{r} + \epsilon\sqrt{r} - \lambda + \nu} = \frac{r}{r} = \frac{r}{r}$ $f(n) = \frac{(n^r + \epsilon n + \nu) - r}{n^r + \epsilon n + \nu} \quad f(n) = 1 - \frac{r}{n^r + \epsilon n + \nu} \quad f(n) = 1 - \frac{r}{r} = \frac{\epsilon}{r} = \frac{r}{r}$	6
$\frac{x^r + 1}{x^r} = x^r + \frac{1}{x^r} \quad t = x - \frac{1}{x} \Rightarrow f(t) = x^r + \frac{1}{x^r}$ $t^r = (x - \frac{1}{x})^r = x^r + \frac{1}{x^r} - r \Rightarrow x^r + \frac{1}{x^r} = t^r + r$ $f(t) = t^r + r$ $f(-3) = (-3)^r + r = 9 + r = 11$	7
الف) $D_g = 9 - x^2 \geq 0 \quad x^2 \leq 9 \quad x \leq 3 \quad x \geq -3 \Rightarrow [-3, 3]$ $D_f = \{0, 1, 2, 3\} \quad D_{\frac{f}{g}} = D_f \cap D_g - \{x g(x) = 0\} = \{0, 1, 2\} - \{\pm 3\} \Rightarrow$ $D_{\frac{f}{g}} = \{0, 1, 2\} \rightarrow \frac{f}{g} = \{0, \frac{r}{r}, (1, -\sqrt{r}), (2, 0)\}$ ب) $D_{\frac{g}{f}} = D_f \cap D_g - \{x f(x) = 0\} = \{0, 1, 2\} - \{2\} = \{0, 1\}$ $\frac{g}{f} = \{(1, -\frac{\sqrt{r}}{r}), (0, \frac{r}{r})\}$	8
الف) $r f(x) = \{(2, 2), (3, 1), (-\omega, 4), (1, -4)\}$ ب) $f(x) + 1 = \{(2, 2), (3, \omega), (-\omega, 3), (1, -1)\}$ ج) $r f^r(x) + 1 = \{(2, 4), (3, 49), (-\omega, 13), (1, 13)\}$ د) $f(rn) = \{(1, 1), (\frac{r}{r}, 4), (\frac{-\omega}{r}, r), (\frac{1}{r}, -r)\}$	9
الف) $f - g = \{(2, 2), (1, 4), (3, 2)\}$ ب) $r f = \{(2, 4), (3, 4), (1, 1), (3, 2), (\omega, 4)\}$ $r \frac{f}{g} = \{(2, 4), (1, \frac{\omega}{\omega}), (3, -2)\} = \{(2, 4), (3, -2)\}$	10