

$$y = \sqrt{f(x) - x + 1} \quad [x] > 4 \Rightarrow x > 4 \Rightarrow x - 1 > 4 \quad (2) (1)$$

$$[x] \leq 4 \Rightarrow x \leq 4 \Rightarrow x + 1 \leq 5$$

$$y = \sqrt{x - 1 - x + 1} = \sqrt{x} \xrightarrow{x > 4} D_f: (4, +\infty)$$

$$y = \sqrt{f(x) - x + 1} = \sqrt{x + 1} \xrightarrow{x + 1 > 4} x > 3 \Rightarrow x > \frac{3}{1} \Rightarrow D_f: \left[\frac{3}{1}, +\infty\right)$$

$$y = \frac{r^2 x^2 + 2rx + 1}{(x^2 + 1)^2} = \frac{r^2(x^2 + 1)(x^2 + 1)}{(x^2 + 1)^2} = \frac{r^2(x^2 + 1)}{(x^2 + 1)^2} = \frac{r^2}{x^2 + 1} \quad (2) (2)$$

$$\Rightarrow y = \frac{r^2}{x^2 + 1} \Rightarrow x^2 + 1 \neq 0 \rightarrow x \neq -1 \rightarrow x \neq \frac{-1}{1} : D_f = \mathbb{R} - \left\{\frac{-1}{1}\right\}$$

$$f(x) = \begin{cases} \frac{x^2 + 2x - 1}{x^2 - 1} & x \neq \pm 1 \\ \frac{a + b}{x + b} & x = \pm 1 \end{cases}$$

$$g(1) = 1 + \frac{r}{1} \quad g(-1) = -1 + \frac{r}{-1} + 1$$

$$r = \frac{a + b}{x + b} \xrightarrow{x=1} \frac{a + b}{b + 1} = r \Rightarrow b = \frac{r - a}{r - 1}$$

$$\Rightarrow b + c = 0 + r = r \quad + 1 = \frac{r - a}{b - 1} \Rightarrow b = \frac{1}{r} \quad \Rightarrow c = r$$

$$f(x) = \frac{x + 1}{x - c} \quad g(x) = \frac{x^2 - 1}{x^2 + ax + b} \xrightarrow{f(x) = g(x)} \frac{(x - 1)(x + 1)}{x^2 + ax + b} = \frac{x + 1}{x - c} = \frac{(x + 1)(x - 1)}{(x - c)(x - 1)} \quad (2) (2)$$

$$\Rightarrow (x - c)(x - 1) = x^2 - x - cx + c = x^2 + x(-1 - c) + c = x^2 + ax + b$$

$$\Rightarrow b = c \quad a = -1 - c \Rightarrow a + b + c = (-1) + (-c) + c + c = c - 1$$

$$f(x) = (x - c)^2(x - 1) \quad g(x) = f(x + 1) + f(-x + 1) = f(x + 1) + (x + 1 - c)^2(x + 1 - 1) \quad (2) (2)$$

$$= (x - c)^2(x) = x(x^2 - 2cx + c^2) = x^3 - 2cx^2 + c^2x$$

$$f(-x + 1) = (-x + 1 - c)^2(-x + 1 - 1)$$

$$= (-x - c)^2(-x) = (x^2 + 2cx + c^2)(-x) = -x^3 - 2cx^2 - c^2x$$

$$\Rightarrow f(x + 1) + f(-x + 1) = x^3 - 2cx^2 + c^2x - x^3 - 2cx^2 - c^2x = -4cx^2$$

$$f(x + 1) + f(-x + 1) = -4cx^2 \Rightarrow g(x) = -4cx^2$$

$$f(-1) = (-1 - c)^2(-1 - 1) = -2(1 + c)^2 \quad -1 = 1 - 2cx \Rightarrow 2cx = 2 \Rightarrow cx = 1 \Rightarrow f(-1) = -2(1 + c)^2$$

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

$$f(x+\sqrt{x}) = x^2 + 2\sqrt{x} \quad f(x) \Rightarrow c = x + \sqrt{x} \Rightarrow x = c \Rightarrow (c)^2 + 2(c) = 248 \quad (2) (5)$$

$$f(x) = x^2 + x \quad f(x-1) + f(1-x) = ? \Rightarrow x-1 = t \Rightarrow 1-x = -t$$

$$\Rightarrow f(x-1) + f(1-x) = f(t) + f(-t) \Rightarrow \begin{cases} f(t) = t^2 + t \\ f(-t) = -t^2 - t \end{cases} \Rightarrow f(t) + f(-t) = t^2 + t - t^2 - t = 0$$

$$\Rightarrow f(x-1) + f(1-x) = 0 \quad (2) (8)$$

$$\left. \begin{aligned} f(x) &= \sqrt{x-a} + k - 1 \\ g(x) &= \sqrt{b-ex} + k \end{aligned} \right\} \Rightarrow f-g = \{1, k\} \Rightarrow \begin{cases} D_{f-g} = \{1\} \\ R_{f-g} = \{k\} \end{cases} \quad (2) (9)$$

$$D_{f-g} = \{1\} \Rightarrow \begin{cases} \sqrt{x-a} = \sqrt{x-a} \Rightarrow x-a=0 \Rightarrow x=a \Rightarrow a = \frac{1}{e} \\ \sqrt{b-ex} = \sqrt{b-x} \Rightarrow b-x=0 \Rightarrow b=x \Rightarrow b = \frac{1}{e} \end{cases}$$

$$(f-g)(1) = k \Rightarrow (0 + k - 1) - (0 + k) = k \Rightarrow k - k = k \Rightarrow k = -1$$

$$\Rightarrow a - \frac{b}{e} - k = \left(\frac{1}{e}\right) - \frac{1}{e} - (-1) = 1 - 1 + 1 = 1 \quad (3) \quad \text{دست}$$

$$f(x) = \sqrt{m-x} + n \Rightarrow D_f = [-\infty, m] \quad (2) (10)$$

$$g(x) = \sqrt{cx+c} \Rightarrow \langle cx+c \rangle_{\geq 0} \Rightarrow \langle x \rangle_{\geq -1} \Rightarrow D_g = [-1, +\infty)$$

$$\Rightarrow D_f \cap D_g = [-\infty, m] \cap [-1, +\infty) = [-1, m] = [-1, v] \Rightarrow m = v$$

$$(f-g)(x) = f(x) - g(x) \Rightarrow \begin{cases} f(x) = \sqrt{v-x} + n = \sqrt{x} + n = x + n \\ g(x) = \sqrt{cx+c} = \sqrt{x} = x \end{cases}$$

$$\Rightarrow (f-g)(x) = x + n - x = n = \sqrt{x} \Rightarrow n = \sqrt{x} - x$$

$$\begin{aligned} m+n &= \\ \wedge \sqrt{x} + x \end{aligned}$$