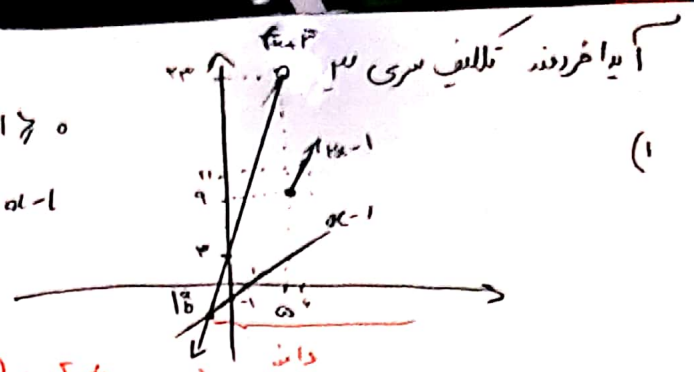


$$f(a) = \begin{cases} \frac{1}{a-1} & [a] > \varepsilon \rightarrow a \geq \omega \\ \frac{1}{a+1} & [a] \leq \varepsilon \rightarrow a < \omega \end{cases} \quad f(a) - a + 1 \geq 0 \quad f(a) \geq a - 1$$



$$\left| \frac{a}{b} \right| = ? \rightarrow a - 1 > \frac{1}{a+1} \rightarrow a > \frac{1}{a+1}$$

$$y = -\frac{1}{x}$$

$$Dy = \left[-\frac{1}{x^2}, +\infty \right)$$

$$y = \frac{\frac{1}{a+1} + \frac{1}{a+1} + 1}{\left(\frac{1}{a+1} + \frac{1}{a+1} \right)^2} = \frac{1}{\left(\frac{1}{a+1} \right)^2} = \frac{1}{\left(\frac{1}{a+1} \right)^2} = \frac{1}{\frac{1}{a+1}} = a+1$$

$$\Delta = 14 - 14 = 0 \rightarrow \text{مساوی}$$

$$a - \frac{b}{a} = -\frac{1}{a} \rightarrow a = -\frac{1}{a}$$

$$Dy = \mathbb{R} - \left\{ -\frac{1}{x} \right\}$$

$$y = \frac{1}{a+1}$$

$$\frac{a^2 + 2a - a - 1}{a^2 - 1} = \frac{(a^2 - a) + (a - 1)}{a^2 - 1} = \frac{a(a-1) + 1(a-1)}{(a^2 - 1)} = \frac{(a-1)(a+1)}{(a^2 - 1)} = \frac{(a-1)(a+1)}{(a-1)(a+1)} = 1$$

$$\frac{a+1}{a-1} \rightarrow y = \frac{1}{a+1} \rightarrow \frac{a+1}{1+b} = \frac{1}{a+1} \rightarrow a+1 = 1+b \rightarrow b = a$$

$$\frac{-a+1}{-1+b} \geq 1 \rightarrow -a+1 \geq -1+b \rightarrow b \leq -a+2$$

$$\frac{a-1}{a} = -a+1 \rightarrow a-1 = -a+1 \rightarrow a = 1 \rightarrow b = 2-2(1) = 0$$

$$g(a) = a + C = a + 1 \rightarrow C = 1 \quad b + C = 2$$

$$f(a) = \frac{a+1}{a-1} \rightarrow Df = \mathbb{R} - C \quad Df = Dg \rightarrow Dg = \mathbb{R} - C$$

$$g(a) = \frac{a^2 - 1}{a^2 + a + b} = \frac{(a+1)(a-1)}{a^2 + a + b}$$

$$a + b + C = 1 - 1 + 1 = 0$$

$$\frac{(a+1)(a-1)}{a^2 + a + b} = \frac{(a+1)}{(a-1)} \rightarrow \frac{(a-1)}{(a-1)} = \frac{1}{1}$$

$$(a-1)^2 = a^2 - 2a + 1 \rightarrow a^2 - 2a + 1 = a^2 + a + b \rightarrow -2a + 1 = a + b \rightarrow b = -3a + 1$$

$$C = 1$$

(a)

$$f(x), (x-r)^r(x-1) \quad g(x), f(x+1) + f(1-x)$$

$$f(x+1) \rightarrow f(t), (t-1-r)^r(t-1-1) = (t-1-r)^r(t-2) = (t^r - 1t^r + 14)(t-2) =$$

$$x+1 = t \quad x = t-1 \quad t^r - 1t^r + 14t - 2t^r + 14t - 2r = t^r - 1t^r + 14t - 2r$$

$$f(x) = t^r - 1t^r + 14t - 2r$$

$$f(1-x) \rightarrow f(t), (1-t-r)^r(1-t-1) = (-t-r)^r(-t), (t^r + t + r)(-t) =$$

$$1-x = t \quad x = 1-t \quad -t^r - r t^r - r t \quad f(x) = -x^r - r x^r - r x$$

$$g(x) = x^r - 1x^r + 14x - 2r - x^r - r x^r - r x = -1x^r + 14x - 2r$$

(4)

$$f(-1) + f(r) = ?$$

$$f(-1) \rightarrow 1 - r x = -1 \quad -r x = -r \rightarrow x = 1 \quad x > 0$$

$$f(-1), \sqrt{1}, r$$

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

$$f(r) \rightarrow 1 - r x = r \quad -r x = r \rightarrow x = -1 \quad x < 0$$

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

$$f(x + \sqrt{x}) = x^r + r x \quad f(x) = ? \quad x + \sqrt{x} = r \quad x + \sqrt{x} - r = 0 \rightarrow t^r + t - r = 0 \quad \sqrt{x} = t$$

$$(t + r)(t - r) = 0 \rightarrow t = -r \rightarrow \sqrt{x} = -r \quad \text{or } t = r \rightarrow \sqrt{x} = r \quad \text{or } t = -r \rightarrow x = r^2$$

$$f(r) = r^r + r \times r = r^r + 1r = r^r + r$$

$$f(x-1) + f(1-x) = ? \quad f(x-1) \rightarrow f(t), (t+1)^r + (t+1) \quad f(x) = (x+1)^r + x+1$$

$$f(x) = x^r + x \quad t = x-1 \quad x = t+1$$

$$f(1-x) \rightarrow f(t), (1-t)^r + (1-t) \quad f(x) = (1-x)^r + 1-x$$

$$1-x = t \quad x = 1-t$$

$$f(x-1) + f(1-x) = (x+1)^r + x+1 + (1-x)^r + 1-x = x^r + 1 + r x^r + 1 + 1 - x^r - r x^r - x + 1 - x = 4x^r + 4$$

$$= \boxed{4x^r + 4}$$

$$f(x) = \sqrt{fx - pa} + k - 1 \quad D_f = \left[\frac{pa}{f}, +\infty \right) \quad \begin{array}{c} \frac{pa}{f} \\ + \\ - \end{array}$$

$$g(x) = \sqrt{b - fx} + 3k \quad D_g = (-\infty, \frac{b}{f}] \quad \begin{array}{c} \frac{b}{f} \\ + \\ - \end{array}$$

$$D_{f \cap g} = D_f \cap D_g = \{1\} \quad \eta_{D_f \cap D_g} = 1 \rightarrow \text{فقط یک عدد را عبارت زیر رادیکال را منفرد کند} \rightarrow \frac{pa}{f} = \frac{b}{f} = 1$$

$$b = f \quad a = \frac{f}{f}$$

$$y = 2f - g = 2k - 1 \rightarrow y = k$$

$$2(\sqrt{fx - pa} + k - 1) - (\sqrt{b - fx} + 3k) = k \quad \text{(یعنی ریشه های زیر رادیکال)}$$

$$2k - 2 - 3k = k \quad -2 - k = k \quad -2 = 2k \rightarrow k = -1$$

$$pa - \frac{b}{f} - k = 2 \times \frac{f}{f} - \frac{f}{f} - (-1) = f - 2 + 1 = \boxed{1}$$

$$f(x) = \sqrt{m - x} + n \quad \begin{array}{c} m \\ + \\ - \end{array} \quad D_f = (-\infty, m]$$

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$$g(x) = \sqrt{x + 2} \quad \begin{array}{c} -1 \\ - \\ + \end{array} \quad D_g = [-1, +\infty)$$

$$D_{g \cap f} = D_g \cap D_f = (-\infty, m] \cup [-1, +\infty) = [-1, m] \rightarrow m = 7 \quad f(x) = \sqrt{7 - x} + n$$

$$f - g(x) = f(x) - g(x) = 4\sqrt{2} = \sqrt{7 - x} + n - \sqrt{x + 2} = \sqrt{7} + n - \sqrt{2} =$$

$$4 - 2\sqrt{2} + n = 4\sqrt{2} \quad n = 1\sqrt{2} - 2 \quad m + n = \sqrt{2} - 2 + 7 = \boxed{1\sqrt{2} + 5}$$