

$$[n] > 1 \rightarrow n > \omega \textcircled{1} \rightarrow y = \sqrt{2n-1-n+1} = \sqrt{n} \rightarrow n \geq 0 \textcircled{2}$$

$$\textcircled{1}, \textcircled{2} \rightarrow n \geq \omega \textcircled{3}$$

$$[n] < 1 \rightarrow n < \omega \textcircled{3} \rightarrow y = \sqrt{2n+3-n+1} = \sqrt{n+2} \rightarrow n \geq -\frac{2}{n} \textcircled{4}$$

$$\textcircled{3}, \textcircled{4} \rightarrow -\frac{2}{n} < \omega \textcircled{5}$$

$$\textcircled{3}, \textcircled{4} \rightarrow n \in [-\frac{2}{n}, +\infty)$$

$$y = \frac{2x^3 + 34x^2 + 11x + 3}{(2x^2 + 2x + 1)^2} = \frac{3(8x^3 + 12x^2 + 4x + 1)}{(2x+1)^4} = \frac{3(2x+1)^3}{(2x+1)^4} = \frac{3}{2x+1}$$

$$\rightarrow D_y = \mathbb{R} - \{-\frac{1}{2}\}$$

$$\frac{n^3 + 2n^2 - n - 2}{n^2 - 1} \xrightarrow{\text{جس فاکتور منفرجه}} \frac{(n-1)(n+1)(n+2)}{(n-1)(n+1)} = n+2, n \neq \pm 1 \rightarrow C=2$$

$$n=1 \rightarrow \frac{a+2}{b+1} = 2, n=-1 \rightarrow \frac{2-a}{b-1} = 1 \rightarrow a = \frac{2}{b}, b = \frac{1}{2}$$

$$\rightarrow b+C = 2 + \frac{1}{2} = \frac{5}{2}$$

$$\frac{n^2-1}{n^2+an+b} = \frac{n+1}{n-c}, D_f = D_g \rightarrow n^2+an+b = (n-1)^2, n-c = n-1$$

$$\rightarrow a=-2, b=1, c=1 \rightarrow a+b+c=0$$

$$f(n) = (n-2)^2(n-1) \rightarrow f(n+1) = (n+1-2)^2(n+1-1) = (n-1)^2(n)$$

$$\rightarrow f(1-n) = (1-n-2)^2(1-n-1) = (-n-2)^2(-n) = (n+2)^2(-n) = -(n+2)^2(n)$$

$$\rightarrow f(n+1) + f(1-n) = (n-1)^2(n) - (n+2)^2(n) = -8n^2$$

$$f(1-2n) = \begin{cases} \sqrt[n]{n} + 2 & n \leq 0 \\ \sqrt[n]{n} & n > 0 \end{cases} \rightarrow f(2) = f(1-2(-1)) = 1$$

$$f(-1) = f(1-2(1)) = 2 \rightarrow f(-1) + f(2) = 3$$

$$f(n + \sqrt{n}) = n^{\sqrt{n}} + \sqrt{n} \rightarrow f(4) = f(2 + \sqrt{2}) = 2^{\sqrt{2}} + \sqrt{2} = 2\sqrt{2}$$

$$\begin{aligned} f(x) &= x^{\sqrt{x}} + x \rightarrow f(x-1) = (x-1)^{\sqrt{x-1}} + x-1 = x^{\sqrt{x-1}} - 1 + \sqrt{x}(1-x) + x-1 = x^{\sqrt{x-1}} - \sqrt{x}x + \sqrt{x}x - 2 \\ &\rightarrow f(1-x) = (1-x)^{\sqrt{1-x}} + 1-x = -x^{\sqrt{x}} + 1 + \sqrt{x}(x-1) + 1-x = -x^{\sqrt{x}} + \sqrt{x}x - \sqrt{x}x + 2 \\ &\rightarrow f(x-1) + f(1-x) = 0 \end{aligned}$$

$$2f - g = \{(1, k)\} \xrightarrow{n=1} 2(\sqrt{f-2a} + k - 1) - \sqrt{b-f} - \sqrt{k} = k$$

$$\rightarrow 2\sqrt{f-2a} - \sqrt{b-f} - k - 2 = k \rightarrow 2\sqrt{f-2a} - \sqrt{b-f} = 2k + 2$$

دانه مشترک این دو عبارت تنها یک دلیل است پس نتیجه می گیریم بازه های در عبارت به صورت $(-\infty, 0]$ و $(1, +\infty)$ بوده است پس اگر $a=1$ باشد آنگاه داخل را دنبال می سازیم
 $f-2a=0 \rightarrow a = \frac{f}{2}$, $b-f=0 \rightarrow b=f$, $2k+2=0 \rightarrow k=-1 \rightarrow 2a - \frac{b}{2} - k = 2(\frac{f}{2}) - \frac{f}{2} - (-1) = 3$

$$g = \sqrt{2n+2} \rightarrow D_g = [-1, +\infty), D_{f \circ g} = [-1, \sqrt{2}] \rightarrow D_f = (-\infty, \sqrt{2}]$$

$$\xrightarrow[\text{را دنبال است}]{\text{در ریشه داخل}} f = \sqrt{m-n} + n \rightarrow m-n=0 \rightarrow m=n$$

$$f-g(2) = 4\sqrt{2} \rightarrow (\sqrt{2-n} + n) - \sqrt{2(n)+2} = 2 + n - 2\sqrt{2} \rightarrow n = 1\sqrt{2} - 2$$

$$\rightarrow n + m = 1\sqrt{2} + \omega$$