

$$f(n) - n + 1 \geq 0 \Rightarrow f(n) \geq n - 1$$

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$$\begin{cases} 2n-1 \geq n-1 \rightarrow n \geq 0 \\ [n] > 1 \rightarrow n > 0 \end{cases} \xrightarrow{n} n \geq 0$$

$$\begin{cases} 4n+3 \geq n-1 \rightarrow n \geq -\frac{4}{3} \\ [n] \leq 1 \rightarrow n < 2 \end{cases} \xrightarrow{n} -\frac{4}{3} \leq n < 2 \xrightarrow{U} [-\frac{4}{3}, 2) \cup [2, +\infty) \cap [-\frac{4}{3}, +\infty) = D_f$$

$$\frac{4n^3 + 3n^2}{12n^2(2n+3)} + \frac{12n+3}{3(2n+1)} \Rightarrow 3 \left(\frac{4n^2(2n+3)}{12n^2+12n} + 2n+1 \right) = 3(2n+1)^2$$

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$$(4n^2 + 4n + 1)^2 = (2n+1)^4 \xrightarrow{\text{عبارت}} \frac{3(2n+1)^3}{(2n+1)^4} = \frac{3}{2n+1} \rightarrow D = \mathbb{R} - \left\{ -\frac{1}{2} \right\}$$

$$\frac{n^3 + 2n^2 - n - 2}{n^2 - 1} = \frac{(n+2)(n-1)}{n^2(n+2) - (n+2)} = \frac{(n-1)(n+1)(n+2)}{(n-1)(n+1)} = n+2$$

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$$\begin{cases} n=-1 \rightarrow \frac{a-b}{b-1} = \frac{-1}{1} \Rightarrow a=b \end{cases}$$

$$\begin{cases} n=1 \rightarrow \frac{a+2}{1+b} = \frac{1}{2} \Rightarrow a = \frac{b}{2} + 1 \end{cases} \rightarrow b = \frac{1}{2} \Rightarrow b+c = \frac{1}{2} + \frac{1}{2} = 1$$

$$\frac{n+1}{n-c} = \frac{(n-1)(n+1)}{n^2+an+b} \Rightarrow n^2+an+b = (n-1)(n-c) \xrightarrow{n=1} 1+a+b=0$$

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$$\begin{cases} 1=c \\ b=c \end{cases} \xrightarrow{\text{نویسند}} n^2+an+b = \frac{(n-1)^2}{n^2-2n+1} \Rightarrow \begin{cases} a=-2 \\ b=1 \end{cases}$$

$$a+b+c = -2+1+1=0$$

$$g(n) = \frac{(n+1-3)^2}{(n-2)^2} \times \frac{(n+1-1)}{(n)} + \frac{(1-n-3)^2}{(n+2)^2} \times \frac{(1-n-1)}{(-n)} \Rightarrow$$

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$$g(n) = (n) \left(\frac{(n-2)^2 - (n+2)^2}{n^2-4n+4 - n^2-4n-4} \right) = (n) (-8n) = -8n^2$$

$$f(-1) \Rightarrow 1 - 2n = -1 \xrightarrow{n=1} K \sqrt{1} = K$$

$$f(\sqrt{1}) \Rightarrow 1 - 2n = \sqrt{1} \xrightarrow{n=1} \sqrt{1-1} + 1 = 1$$



$$n + \sqrt{n} = 4 \rightarrow n + \sqrt{n} - 4 = 0 \xrightarrow{\sqrt{n}=t} t^2 + t - 4 = 0$$

$$(t+4)(t-1) = 0$$

$$\begin{aligned} &\rightarrow t = -4 \text{ or } t = 1 \xrightarrow{\sqrt{n}=t} \sqrt{n} = -4 \text{ (invalid)} \\ &\rightarrow t = 1 \text{ or } t = -4 \xrightarrow{\sqrt{n}=t} \sqrt{n} = 1 \rightarrow n = 1 \end{aligned}$$

$$f(4) = K^4 + 3(K) = 241$$

$$f(n-1) + f(-(n-1)) = (n-1)^4 + (n-1) - (n-1)^4 - (n-1) = 0$$

$$\begin{aligned} D_f = Kx - 1a \geq 0 &\rightarrow x \geq \frac{1a}{K} \\ D_g = b - Kx \geq 0 &\rightarrow \frac{b}{K} \geq x \end{aligned} \xrightarrow{D_f \cap D_g} D_f \cap D_g \Rightarrow \frac{1a}{K} \leq 1 \rightarrow a \leq \frac{K}{1}$$

$$\begin{aligned} f(1) - g(1) = K &\Rightarrow 1(\sqrt{K-1} + K-1) - (\sqrt{K-1} + 1K) = K \\ K-1-1K = K &\Rightarrow K=1 \end{aligned}$$

$$1a - \frac{b}{K} - K = 1\left(\frac{K}{1}\right) - \frac{K}{1} - 1 = 1$$

$$\begin{aligned} D_f \rightarrow m-x \geq 0 &\rightarrow x \leq m \\ D_g \rightarrow 1x+1 \geq 0 &\rightarrow x \geq -1 \end{aligned} \xrightarrow{D_f \cap D_g} D_{f \cap g} = [-1, m] \Rightarrow m \leq v$$

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

$$m+n \leq 4\sqrt{1} = 4 + v \leq 4\sqrt{1} + v$$