

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

14, 15

(۲) - ۱

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

$$\begin{cases} 4n+3 \geq n-1 \rightarrow n \geq -\frac{4}{3} \\ [n] \leq 1 \rightarrow n < 2 \end{cases} \xrightarrow{n} -\frac{4}{3} \leq n < 2$$

$$\cup \rightarrow \left[-\frac{4}{3}, 2\right) \cup [2, +\infty) \subseteq \left[-\frac{4}{3}, +\infty\right) = D_f$$

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

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

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

(۲) - ۳

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

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

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

(۲) - ۴

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

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

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

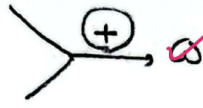
(۲) - ۵

$$g(n) = (n) \left( \frac{(n-2)^2}{n^2-4n+4} - \frac{(n+2)^2}{n^2+4n+4} \right) = (n) (-1/n) = -1/n$$

$$f(-1) \Rightarrow 1 - 2n = -1 \xrightarrow{n=1} \text{KJ} \checkmark$$

(1) -4

$$f(3) \Rightarrow 1 - 2n = 3 \xrightarrow{n=-1} \sqrt{-1} + 2 \checkmark$$



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

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

$$\begin{aligned} &\rightarrow t = -4 \text{ or } t = 1 \xrightarrow{\sqrt{n}=t} \sqrt{n} = -4 \text{ or } \sqrt{n} = 1 \\ &\rightarrow n = 16 \text{ or } n = 1 \end{aligned}$$

$$f(4) = 4^K + 3(4) = 24 \checkmark$$

$$f(n-1) + f(-(n-1)) = (n-1)^3 + (n-1) - (n-1)^3 - (n-1) = 0$$

(1) -1

$$\begin{aligned} D_f = \{n \mid a \geq 0\} &\rightarrow n \geq \frac{a}{K} \\ D_g = \{n \mid b - Kn \geq 0\} &\rightarrow \frac{b}{K} \geq n \end{aligned} \xrightarrow{D_f \cap D_g} D_f \cap D_g \Rightarrow \frac{a}{K} \leq n \leq \frac{b}{K}$$

(1) -9

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

$$K - 1 - K = K \checkmark \Rightarrow K = -1$$

$$3a - \frac{b}{K} - K = 3\left(\frac{K}{K}\right) - \frac{K}{K} + 1 = 3 \checkmark$$

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

(1) -10

$$f(3) - g(3) = 4\sqrt{2} \Rightarrow \sqrt{3-3} + n - \sqrt{1-3} = 4\sqrt{2} \Rightarrow n = 1\sqrt{2} \checkmark$$

$$m + n \leq 1\sqrt{2} - 2 + 3 \leq 1\sqrt{2} \checkmark$$