

19, 25

علمی حقایق

دوازدهم سیر

کلاس

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با شماره تشریحی تکلیف شماره

$$f(n) = \begin{cases} 2n-1 & ; n \geq 0 \\ 5n+3 & ; n < 0 \end{cases}$$

$$f(n) - n + 1 \geq 0 \Rightarrow \begin{cases} n \geq 0 \Rightarrow 2n-1-n+1 \geq 0 \Rightarrow n \geq 0 \Rightarrow n \geq 0 \\ n < 0 \Rightarrow 5n+3-n+1 \geq 0 \Rightarrow 4n+4 \geq 0 \Rightarrow n \geq -1 \end{cases}$$

$$Df = [-1, +\infty) \leftarrow \text{I} \leftarrow [-1, 0) \leftarrow n$$

$$y = \frac{\Delta x^3 + 12x^2 - 6n + 1}{(2n+1)^4} \Rightarrow Df \Rightarrow 2n+1 \neq 0 \Rightarrow 2n \neq -1 \Rightarrow n \neq -\frac{1}{2}$$

$$\Rightarrow Df = \mathbb{R} - \left\{ -\frac{1}{2} \right\}$$

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$$f(n) = \begin{cases} \frac{(n+1)(n+2)(n+3)}{n^2+1} & ; n \neq \pm 1 \\ \frac{a+n^2}{n+b} & ; n = \pm 1 \end{cases}$$

$$\Rightarrow n+2 = n+3 \Rightarrow \begin{cases} n=1 \Rightarrow 3 = \frac{a+1}{b+1} \Rightarrow 3b-a=1 \\ n=-1 \Rightarrow 1 = \frac{a+1}{-1+b} \Rightarrow a+b=2 \end{cases}$$

$$b+c = \frac{1}{2} \Rightarrow a = \frac{1}{2}, b = \frac{1}{2}$$

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

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

$$a+b+c = 1 \Rightarrow a = -1, b = 1, c = 1$$

$$f(n+1) + f(1-n) = (n-1)^2(n) + (n+1)^2(-n) = (n^2-2n+1)n + (n^2+2n+1)(-n) = n^3-2n^2+n - n^3-2n^2-n = -4n^2$$

$$f(-1) + f(1) \Rightarrow \begin{cases} f(-1) \rightarrow n=1 \rightarrow f(-1) = \frac{1}{2} \\ f(1) \rightarrow n=-1 \rightarrow f(1) = \frac{1}{2} \end{cases} \Rightarrow f(-1) + f(1) = \frac{1}{2} + \frac{1}{2} = 1$$

(2)

$$f(n + \sqrt{n}) = n^2 + 2n \rightarrow (4)^2 + 2(4) = 16 + 8 = 24$$

(2)

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

(2)

$$b - c = 0 \Rightarrow b = c, \quad c - 2a = 0 \Rightarrow a = \frac{c}{2}$$

من نقطه ۲ و ۳

(2)

$$2f - g = 2k - 2 - 3k = k - 2 \Rightarrow k = -2 \Rightarrow k = -1 \Rightarrow 2a - \frac{b}{2} - k = 2 - 1 + 1 = 2$$

$$\begin{cases} 2n + 2 > 0 \rightarrow n > -1 \\ m - n > 0 \rightarrow n < m \rightarrow m > n \end{cases}$$

(2)

$$f - g(m) = \sqrt{2-2} + m - \sqrt{1} = 0 + m - 1 = m - 1$$

$$\Rightarrow 1\sqrt{2} = 2 + m \Rightarrow m = 1\sqrt{2} - 2 = \sqrt{2} - 2$$