

۵۰ آفرین!

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شماره کلیت: ۳

آریه سیر

$$f(n) = \begin{cases} 2n-1 & ; [n] > 3 \\ 2n+3 & ; [n] \leq 3 \end{cases}$$

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

$$y = \sqrt{f(n) - n + 1} \geq 0$$

(۲) (۱)

$$\begin{aligned} 2n-1-n+1 &\geq 0 & ; n \geq \omega & \xrightarrow{1} n \geq \omega \text{ (۱)} \\ 2n+3-n+1 &\geq 0 & ; n < \omega & \xrightarrow{1} n < \omega \text{ (۲)} \end{aligned}$$

$$\frac{1}{2} \rightarrow D_f = \mathbb{R} - \left\{ -\frac{1}{2} \right\}$$

$$y = \frac{3(2n^3 + 12n^2 + 9n + 1)}{(2n^2 + 2n + 1)^2} = \frac{3(2n+1)^3}{(2n+1)^4} = \frac{3}{2n+1} \rightarrow D_f = \mathbb{R} - \left\{ -\frac{1}{2} \right\}$$

(۲)

(۲)

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

(۲)

(۲)

$$\begin{aligned} g = n+c & \xrightarrow{Dg, Df = \mathbb{R}} g = f \rightarrow c = 2 \\ g = n+2 & \end{aligned}$$

$$b+c = \frac{2}{\omega}$$

$$\begin{aligned} -b+3+2 &= 2b+10 \\ b &= -1 \\ a &= -b+3 \\ c &= 2 \end{aligned}$$

$$\begin{aligned} f(n) &= \frac{n+1}{n-c} \rightarrow Df = Dg \Rightarrow n^2 - \gamma c + c^2 \rightarrow a = -\gamma c \\ g(n) &= \frac{n^2-1}{n^2+an+b} \rightarrow f = g \Rightarrow \frac{(n-c)(n-1)}{n^2-(c+1)n+c} \rightarrow a = -c-1, b = c \end{aligned}$$

$$\begin{aligned} a+b+c &= -\gamma c + c + c = 0 \\ a+b+c &= -2+1+1 = 0 \end{aligned}$$

$$\begin{aligned} g(n) &= f(n+1) + f(1-n) \\ (n-2)^2(n) + \left[(-n-2)^2(-n) \right] &= n \left[\frac{(n-2)^2 - (n+2)^2}{-4n} \right] = -\frac{1}{2}n^2 \end{aligned}$$

(۲) (۲)

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

(2) (4)

$$f(-1) + f(3) = \sqrt{1+1} + \sqrt{3-1} = \sqrt{2} + \sqrt{2} = 2\sqrt{2}$$

$\downarrow$ $1-2n = -1 \Rightarrow n = 1$
 $\downarrow$ $1-2n = 3 \Rightarrow n = -1$
 $\downarrow$ $n = 1 \Rightarrow f(1) = \sqrt{2}$
 $\downarrow$ $n = -1 \Rightarrow f(-1) = \sqrt{2}$

$$f(n+\sqrt{n}) = n + \sqrt{n}$$

(2) (✓)

$$f(4) = ? \rightarrow n + \sqrt{n} = 4 \rightarrow n + \sqrt{n} - 4 = (\sqrt{n} + 1)(\sqrt{n} - 3) = 0$$

$\downarrow$ $n = 9$
 $\downarrow$ $f(4) = \sqrt{4+1} + \sqrt{4-1} = \sqrt{5} + \sqrt{3}$

$\downarrow$ $\sqrt{n} = 3, \sqrt{n} = 1 \rightarrow n = 9$

$$f(\frac{n-1}{a}) + f(1-\frac{n-1}{a}) = ?$$

$$f(n) = n + \sqrt{n}$$

$$\rightarrow (n-1)^{\frac{1}{a}} + (\frac{n-1}{a}) + \frac{(1-n)^{\frac{1}{a}}}{a} + (1-\frac{n-1}{a}) = 0$$

(2) (✓)

$$f(a) + f(-a) = ?$$

$$f(a) + f(-a) = a + \sqrt{a} - a - \sqrt{a} = 0$$

$$f(n) = \sqrt{n-3a} + n - 1 \rightarrow f(1) = 1 - 1 = 0$$

$$g(n) = \sqrt{n-3a} + 3k \rightarrow g(1) = 3k$$

(2) (9)

$$f-g = \{ (1, k) \}$$

$$f-a = \frac{n}{4} - k = ?$$

$$f - 1 + 1 = \sqrt{1-3a} + 1 = 1$$

$$n_f \cap n_g = \{1\}$$

$$[\frac{3a}{4} + \infty) \cap (-\infty, \frac{n}{4}] \rightarrow \frac{3a}{4} + \infty < \frac{n}{4} \rightarrow a < \frac{n}{3}$$

$$f(1) - g(1) = k$$

$$\sqrt{1-3a} + 1 - 3k = k \rightarrow \sqrt{1-3a} = 4k - 1$$

$$f(n) = \sqrt{m-n} + n = f(n) = \sqrt{v-n} + n$$

(2) (10)

$$g(n) = \sqrt{2n+2}$$

$$D_{f,g} = [-1, v] \rightarrow D_f \cap D_g = [-1, v] \rightarrow m = v$$

$$(-\infty, m] \cap [-1, \infty)$$

$$f-g(x) = 4\sqrt{x}$$

$$f(4) - g(4) = 4\sqrt{4}$$

$$4+4 - 4\sqrt{4} = 4\sqrt{4}$$

$$n = 4\sqrt{4}$$

$$m+n = 4\sqrt{4} + 4$$