

$$f(n) = \begin{cases} 2n-1; & n \geq \omega \\ 2n+2; & n < \omega \end{cases} \quad f(n) \geq n-1 \sim \underline{n \geq 0} \Rightarrow 2n-1 \geq n-1$$

$$n \geq 0 \sim n \geq 0 \quad / \quad n < \omega \sim 2n+2 \geq n-1 \sim n \geq -\frac{3}{2} \sim$$

$$-\frac{3}{2} \leq n < \omega \quad \textcircled{1}, \textcircled{2} \Rightarrow n \in \left[-\frac{3}{2}, \omega\right)$$

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

$$\Rightarrow 2n+1 \neq 0 \sim n \neq -\frac{1}{2} \sim D_f = \mathbb{R} - \left\{-\frac{1}{2}\right\}$$

$$\frac{n(n^2-1) + 2(n^2-1)}{(n^2-1)} = n+2 \sim \underline{c=2}$$

$$n=1 \sim f(1) = 3 \sim \frac{a+2}{1+2} = 3 \sim \begin{cases} a+2=9 \\ a+b=3 \end{cases} \Rightarrow \begin{cases} a=7 \\ b=-4 \end{cases}$$

$$a \cdot f(-1) = 1 \sim \frac{a+2}{b-1} = 1 \sim \begin{cases} b=\frac{1}{2} \\ b+c=-\frac{5}{2} \end{cases}$$

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

$$a = -2 \quad b = 1 \quad c = 1$$

$$a+b+c = 0$$

$$1-2n = -1 \sim n=1 \sim f(-1) = 3$$

$$1-2n = 3 \sim n=-1 \sim f(3) = -1+2=1$$

$$f(-1) + f(3) = 4$$

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$f(n+1) = (n-2)^2 n \quad f(1-n) = (n+2)^2 \cdot n$ $f(n+1) + f(1-n) = n((n-2)^2 - (n+2)^2) = n \times 2n \times -4 = -1n^2 = g(n)$	5
$n + \sqrt{n} = 4 \sim n = 2 \sim f(4) = 4^2 + 12 = 28$	7
$f(n) = n(n^2+1) \sim f(n-1) = (n-1)(n^2-2n+2)$ $f(1-n) = -(n-1)(n^2-2n+2)$ $f(n-1) + f(1-n) = 0$	8
چون مقدار $\frac{1}{2}$ را افزود مشترک است پس ا مرز را عند داخل را بقیال قدری کند $\sqrt{4-4n+2k} = g(n) \quad \sqrt{2n-4+k-1} = f(n)$ $2f - g = 2k - 4 - 2k = -4 \sim k = -1 \quad a = \frac{4}{3} \quad b = 4$ $2a - \frac{b}{2} - k = 4 - 2 + 1 = 3$	9
$m - \sqrt{m} = 0 \quad \underline{m = 1} \quad g(2) = 2\sqrt{2}$ $f(x) = 1\sqrt{2} \quad \sqrt{2-2} + n = 1\sqrt{2} \sim n = 1\sqrt{2} - 2$ $\underline{m + n = 1\sqrt{2} + 1}$	10

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