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$$f(u) = \begin{cases} 2u-1 & [u] > 5 \\ 5u+5 & [u] \leq 5 \end{cases}$$

$$y = \sqrt{f(u)-u+1}$$

$$[u] > 5 \rightarrow u \geq 5$$

$$f(u)-u+1 = 2u-1-u+1 = u$$

شرط اذیکال برقرار

$$[u] \leq 5 \rightarrow u < 5$$

$$f(u)-u+1 = 5u+5-u+1 = 4u+6$$

$$4u+6 \geq 0 \Rightarrow u \geq -\frac{3}{2}$$

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

$$y = \frac{2(2u^2+5u+1)(u+1)}{(2u^2+5u+1)^2} = \frac{2(2u^2+5u+1)}{(2u^2+1)^2}$$

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$$= \frac{2(2u+1)}{(2u+1)^2} = \frac{2}{2u+1}$$

$2u+1 \neq 0 \Rightarrow u \neq -\frac{1}{2}$

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

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

$$= \frac{(u+2)(u+1)(u-1)}{(u-1)(u+1)}$$

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$$f(u) = x+2$$

$$f = g \Rightarrow u+2 = x+2 \quad \boxed{x=2}$$

$$u = -1 \quad \frac{-a+2}{b-1} = g(-1) \Rightarrow -a+2 = b-1 \Rightarrow a+b=3$$

$$u = 1 \quad \frac{a+2}{b+1} = g(1) \Rightarrow a+2 = 3b+2 \Rightarrow a-3b=0$$

$$a+b=3$$

$$-(a-3b=0)$$

$$4b=3 \quad \boxed{b=\frac{3}{4}}$$

$$a+\frac{1}{4}=2 \quad \boxed{a=\frac{7}{4}}$$

$$b+c = \frac{3}{4} + 2 = \frac{11}{4}$$

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

$$(n-1)^2 = n^2 - 2n + 1$$

$$\begin{cases} c=1 \\ b=1 \\ a=-2 \end{cases}$$

$$\frac{n+1}{n-1} = \frac{n+1}{n-1}$$

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$$-2+1+1=0$$

$$D_f = D_g = \mathbb{R} - \{1\}$$

$$f(n+1) = (n+1-1)^2(n+1-1) = n(n^2 - 2n + 1) \quad (2) - 5$$

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

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

$$g(n) = -4n^2$$

$$f(-1)$$

$$1-2n = -1$$

$$1=2n \quad x=1$$

$$1 \pm 1 = 2$$

$$f(1)$$

$$1-2n = 1$$

$$-2=2n$$

$$x=-1$$

$$1 \pm 1 = 2$$

$$f(-1) + f(1) = 2 + 1 = 3$$

پس از آن

$$f(n+\sqrt{n}) = n^2 + 2n$$

$$n+\sqrt{n} = y$$

$$\sqrt{n} = t \Rightarrow n = t^2$$

$$t^2 + t = y$$

$$t^2 + t - y = 0$$

$$(t+y)(t-y) = 0$$

$$t < -2 \text{ و } 2 < t \Rightarrow t = \sqrt{n} > 0$$

$$f\left(\frac{t+\sqrt{t^2}}{2}\right) = t^2 + 2 \times t = 2t^2 + 2t$$

$$n=t^2$$

$$f(n) = n^2 + n$$

$$f(n-1) + f(1-n) = (n-1)^2 + (n-1) + (1-n)^2 + (1-n) \\ = n^2 - 2n + 1 + n - 1 + 1 - 2n + 1 + n - 1 = 0$$

$$c_n - c_n \geq 0$$

$$b - c_n \geq 0$$

$$\frac{c_n}{c} = 1 \rightarrow a = \frac{c}{c}$$

$$\frac{b}{c} = 1 \rightarrow b = c$$

$$f(1) = \sqrt{c-c} + k - 1 = k - 1$$

$$g(1) = \sqrt{c-c} + ck = ck$$

$$c(k-1) - ck = k$$

$$-k - c = k$$

$$k = -1$$

$$c_n - \frac{b}{c} - k = c\left(\frac{c}{c}\right) - \frac{c}{c} - (-1) = \textcircled{2}$$

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

$$\sqrt{m-r} + h - 2\sqrt{r} = 4\sqrt{r}$$

$$\sqrt{m-r} + h = 6\sqrt{r} \rightarrow r+h = 6\sqrt{r} \Rightarrow h = 6\sqrt{r} - r$$

$$m+r \geq 0 \Rightarrow m \geq -1 = 1 \quad Df = (-\infty, +\infty]$$

$$m = \checkmark$$

$$m+h = r + 6\sqrt{r} - r = \boxed{6\sqrt{r}}$$