

$$f(n), \begin{cases} r_{n-1} - \lfloor n \rfloor > \varepsilon \\ r_{n+1} - \lfloor n \rfloor < -\varepsilon \end{cases} \quad g(n) = \sqrt{f(n) - n + 1}$$

$$1) \quad k \geq 0 \rightarrow f(n), r_{n-1} \rightarrow r_{n-1} - n + 1 \geq 0 \rightarrow k \geq 0 \rightarrow [0, +\infty)$$

$$2) \quad k < 0 \rightarrow f(n) < \varepsilon n + 1 \rightarrow r_{n+1} - n + 1 \geq 0 \rightarrow r_{n+1} + \varepsilon \geq 0 \rightarrow r_{n+1} > -\varepsilon \rightarrow k > -\frac{\varepsilon}{r} [-\frac{\varepsilon}{r}, 0)$$

$$U \rightarrow [-\frac{\varepsilon}{r}, +\infty)$$

$$1) \quad \text{دانه} \rightarrow \text{نقیص منقسم شود} \rightarrow r_{n^2} + \varepsilon n + 1 \geq 0 \rightarrow n^2 + \varepsilon n + \varepsilon \geq 0 \rightarrow (n + \frac{\varepsilon}{2})^2 \geq -\frac{\varepsilon^2}{4} \rightarrow n \geq -\frac{\varepsilon}{2}$$

$$2) \quad \text{دانه} \rightarrow R - \left\{ \frac{1}{r} \right\} \quad (P) \rightarrow g(n) = \frac{r(\lambda k^2 + 12k^2 + 9n + 1)}{(r_{n^2} + \varepsilon n + 1)^2} \rightarrow k = -\frac{1}{r} \rightarrow \text{نقیص منقسم شود} \rightarrow k = -\frac{1}{r}$$

$$\text{منقسم} \rightarrow r_{n^2} + 12k^2 + 9n + 1 \geq 0 \rightarrow k \geq \frac{1}{r} \rightarrow \text{نقیص منقسم شود} \rightarrow k = \frac{1}{r}$$

ابن سؤال 2 در منقسم شود $\rightarrow$ منقسم هر یک $-\frac{1}{r}$ $\rightarrow$ منقسم منقسم است $-\frac{1}{r}$

$$f(n), \begin{cases} \frac{k^2 + r_{n^2} - n - r}{n^2 - 1} & k \neq \pm 1 \\ \frac{a_{n+r}}{k+b} & k = \pm 1 \end{cases} \quad g(n), k+c \rightarrow \frac{k^2 + r_{n^2} - n - r}{n^2 - 1} \rightarrow \frac{(k-1)(k+1)(n+r)}{(k-1)(k+1)}$$

$$\rightarrow k+r = k+c \rightarrow \boxed{c=r} \quad \begin{matrix} k=1 \\ k=-1 \end{matrix} \rightarrow \begin{matrix} k+1 \leq r \\ -1+1 \leq r \end{matrix} \rightarrow \begin{matrix} a+r \\ 1+b \end{matrix} \leq r \rightarrow r+r \leq a+r \rightarrow r \leq b-a \leq -1$$

$$\begin{matrix} k=1 \\ k=-1 \end{matrix} \rightarrow \begin{matrix} -a+r \\ -1+b \end{matrix} \leq 1 \rightarrow -a+r \leq -1+b \rightarrow b+a = r \rightarrow \begin{cases} r \leq b-a \leq -1 \\ b+a \leq r \end{cases}$$

$$\rightarrow b+c \leq \frac{1}{r} + r \leq \left\lfloor \frac{a}{r} \right\rfloor \quad \begin{cases} r \leq b-a \leq -1 \\ b+a \leq r \end{cases} \rightarrow b \leq \frac{1}{r} \quad a \leq r, a \leq \frac{a}{r}$$

$$f(n), \frac{k+1}{n-c}, g(n), \frac{(k+1)(n-1)}{k^2+an+b} \rightarrow k^2+an+b, k^2+k(-1-c)+c \rightarrow -1-c, a$$

$$\frac{a+c}{1} \leq \frac{b+c}{1} \rightarrow -1-b-a \rightarrow b = -1-a$$

$$\frac{(k+1)(n-1)}{(k-1)(n-1)} \rightarrow c \leq 1 \rightarrow a = -r \quad b \leq 1 \rightarrow a+b+c \leq 0$$

$$g(u) \leq f(u+1) + f(1-u) \rightarrow f(u+1) = (u+1-r)^r (u+1) = (u-r)^r(u) \quad (5)$$

$$f(1-u) = (1-u-r)^r (1-u-1) = (-u-r)^r (-u) \rightarrow g(u) =$$

$$g(u) \leq \cancel{\epsilon u^r} + \cancel{\epsilon u} - \cancel{u^r} - \cancel{\epsilon u^r} - \cancel{\epsilon u} = g(u) = -\lambda u^r$$

$$f(-1) + f(r) \leq ? \rightarrow 1-r = -1 \rightarrow r \leq r \rightarrow u \leq 1 \rightarrow \boxed{r}$$

$$\xrightarrow{k=r} 1-r = r \rightarrow r = -r \rightarrow u = -1 \rightarrow \boxed{-1+r} = \boxed{1} \quad f(-1) + f(r) \leq \boxed{0}$$

$$f(u+\sqrt{u}) \leq u \epsilon - r u \rightarrow u + \sqrt{u} \leq \epsilon \rightarrow u \leq \epsilon \rightarrow r \Delta y + 11 \leq r \Delta y$$

$$f(u) = u^r + u \rightarrow (u-1)^r + (u-1) + (1-u)^r + (1-u) \rightarrow$$

$$\cancel{u^r} - 1 + \cancel{u} - \cancel{u^r} + u - 1 + 1 - \cancel{u^r} - \cancel{u} + \cancel{u^r} + 1 - u = 0$$

$$\xrightarrow{u=1} r \sqrt{\epsilon - r a} + k - r - \sqrt{b - r} + r k \leq k \rightarrow r \sqrt{\epsilon - r a} - r - \sqrt{b - r} = k$$

$$\xrightarrow{r=r} \sqrt{r - r a} - 1 - \frac{\sqrt{b - r}}{r} - k = 0 \rightarrow r a - \frac{b}{r} - k \leq 1$$

$$f(u) \leq \sqrt{m-u} + n \quad g(u) \leq \sqrt{u+r} \rightarrow D_g(u+r) \rightarrow u \geq -1 \rightarrow D_f(m-u) \rightarrow u \leq m \quad (10)$$

$$\boxed{m \leq V} \rightarrow f(r) = \underbrace{g(r)}_{r \sqrt{r}} + n \sqrt{r} \rightarrow g(r) \leq \sqrt{1} \leq r \sqrt{r} \rightarrow f(r) \leq \lambda \sqrt{r}$$

$$f(r) \leq \underbrace{\sqrt{V-r}}_r + n \leq \lambda \sqrt{r} \rightarrow \boxed{n \leq \lambda \sqrt{r} - r} \quad m+n \leq \lambda \sqrt{r} - r + V \leq \Delta + \lambda \sqrt{r}$$

شهرزادینوشتی

داره سوال ۲

$$\frac{\cancel{\lambda k^p} + 12k^p + 4n+1}{\cancel{-\lambda k^p} + \lambda k^p + 2n} \cdot \frac{2k^p + \varepsilon n+1}{2k+1}$$

$$\frac{2k^p + \varepsilon n+1}{2k^p + \varepsilon n+1}$$

$$y = \frac{p}{2n+1}$$

$$\rightarrow y = \frac{p(2n+1)(\cancel{2k^p} + \varepsilon n+1)}{(\cancel{2k^p} + \varepsilon n+1)(2k^p + \varepsilon n+1)} = \frac{p(2n+1)}{(2n+1)2}$$