

نام و نام خانوادگی علی عطایی	پاسخنامه تشریحی تکلیف شماره ۳ کلاس دوازدهم ریاضی
$f(n) = 2n-1 \quad [n] \geq \varepsilon \rightarrow n \geq \omega \rightarrow y = \sqrt{\frac{2n-1}{n}} \geq y = \sqrt{n} \geq 0 \rightarrow n \geq \omega$	(۲)
$f(n) = \varepsilon n + r \quad [n] \leq \varepsilon \rightarrow n \leq \omega \rightarrow y = \sqrt{\frac{\varepsilon n + r}{n}} \geq y = \sqrt{\varepsilon n} \geq 0 \rightarrow n \geq \frac{-\varepsilon}{r} \rightarrow \omega > n \geq \frac{-\varepsilon}{r}$ $I \cup II \Rightarrow n: \left[\frac{-\varepsilon}{r}, +\infty \right)$	(۲)
$y = \frac{r(n^2 + 12n + 4n + 1)}{(n+1)^2} = \frac{r(n+1)^2}{(n+1)^2} \Rightarrow y = \frac{r}{n+1} \neq 0$ $n \neq -\frac{1}{r}$ $D_f: \mathbb{R} - \left\{ -\frac{1}{r} \right\}$	(۲)
$f_0 = \frac{-r}{-1} = r = g(0) = c \rightarrow r = c$ $b+c = r + \frac{1}{r} = \frac{\omega}{r}$ $f(1) = \frac{a+r}{1+b}, g(1) = 1+r = r \rightarrow \frac{a+r}{1+b} = r \rightarrow a+r = r+b \rightarrow a-b+r+r = b \rightarrow a-b = -2r$ $f(-1) = \frac{-a+r}{-1+b}, g(-1) = -1+r = 1 \rightarrow \frac{-a+r}{-1+b} = 1 \rightarrow -a+r = -1+b \rightarrow -a+r = -1+b \rightarrow a = r-b$	(۲)
$f(n) = g(n) = \frac{(n-1)(n+1)}{n^2+an+b} = \frac{n^2-1}{n^2+an+b} \rightarrow n^2+an+b = (n-1)(n-c) \Rightarrow (n-1)(n-c) = n^2+an+b$ $\left\{ \begin{array}{l} n^2+an+b = (n-1)^2 = n^2-2n+1 \rightarrow a=-2, b=1 \\ a+b+c = -2+1+1 = 0 \rightarrow \text{صفر} \end{array} \right.$	(۲)
$f(n+1) = (n+1-r)^r (n+1-1) = (n-r)^r (n)$ $f(1-n) = (1-n-r)^r (1-n-1) = (n+r)^r (-n)$ $\Rightarrow g(n) = (n) \left((n-r)^r - (n+r)^r \right)$ $\Rightarrow g(n) = (n) \left(\frac{n-r+n+r}{n} \right) \left(\frac{n-r-n-r}{-2} \right) = -1 n^r \rightarrow g(n) = -n n^r$	(۲)

$$f(-1) = f(1-rn) \rightarrow -1 = 1-rn \rightarrow rn = 2 \rightarrow n = 2 \xrightarrow[r=\sqrt{x}]{x > 0} f(-1) = r\sqrt{(-1)} = r \quad (r)$$

$$f(r) = f(1-rn) \rightarrow r = 1-rn \rightarrow -rn = r-1 \rightarrow n = \frac{1-r}{r} \xrightarrow[r=\sqrt{x+r}]{x < 0} f(r) = \frac{\sqrt{(-1)+r}}{-1} = 1 \quad (r)$$

$$f(-1) + f(r) = r + 1 = \text{مجموعه}$$

$$f(4) = f(n+\sqrt{n}) \rightarrow 4 = n+\sqrt{n} \rightarrow -\sqrt{n} = n-4 \xrightarrow{()^2} n = n^2 - 8n + 16 \quad (r)$$

$$\rightarrow n^2 - 8n + 16 = 0 \rightarrow \begin{cases} n = 4 \checkmark \rightarrow 4 + r = 4 \checkmark \text{ صحیح} \\ n = 4 \rightarrow 4 + r = 4 \checkmark \text{ صحیح} \end{cases} \rightarrow f(4) = (4)^r + r(4) = 4^r + 4r \quad (r)$$

$$\left. \begin{aligned} f(n-1) &= (n-1)^r + (1-n) \\ f(1-n) &= (1-n)^r + (n-1) \end{aligned} \right\} \Rightarrow (n-1)^r + (1-n)^r = n^r - r n^{r-1} + \dots + 1 - r n^{r-1} + \dots + 1 = 2 \quad (r)$$

$$\rightarrow \text{مجموعه}$$

$$f(n) = \sqrt{a n - r a} + k - 1 \rightarrow n \geq \frac{r a}{a} \quad g(n) = \sqrt{b - c n} + r k \rightarrow \frac{b}{c} \geq n \quad (r)$$

$$f \circ g : \{(b, k)\} \rightarrow \frac{r a}{c} = 1 \rightarrow a = \frac{c}{r} \quad f(1) = \sqrt{c - r(\frac{c}{r})} + k - 1 = r k - r \quad (r)$$

$$g(1) = \sqrt{b - c} + r k = r k \quad f(1) - g(1) = r k - r - r k = -r \rightarrow r = 1 \rightarrow k = 1 \quad (r)$$

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

$$D_{f \circ g} : [-1, V] = D_f \cap D_g \quad g(n) = \sqrt{m+n} \geq 0, \quad f(n) = \sqrt{m-n} \geq 0 \quad (r)$$

$$D_g : n \geq -1 \quad \cap \quad D_f : m \geq n \rightarrow m \geq n \geq -1 \Rightarrow m \geq -1 \quad (r)$$

$$g(r) = \sqrt{r(r)} + r = r\sqrt{r} \quad f(r) = \sqrt{r-r} + n = n \quad (r)$$

$$f \circ g(r) = r + n - r\sqrt{r} = 4\sqrt{r} \rightarrow r + n = 4\sqrt{r} \rightarrow n = 4\sqrt{r} - r \quad (r)$$

$$m + n = 4\sqrt{r} - r + V = \text{مجموعه}$$