

$$g = \sqrt{f(m) - m + 1} \quad m \geq 4$$

$$f(m) = \begin{cases} m-1 & ; m \geq 4 \\ m+3 & ; m \leq 3 \end{cases}$$

$$g = \begin{cases} \sqrt{m} & ; m \geq 4 \\ \sqrt{m+3} & ; m \leq 3 \end{cases}$$

$$g = \begin{cases} \sqrt{m-1-m+1} & ; m \geq 4 \\ \sqrt{f(m)+3-m+1} & ; m \leq 3 \end{cases}$$

$$\begin{aligned} &\rightarrow m \geq 0 \cup m \geq 4 \rightarrow m \geq 4 \\ &\rightarrow m+3 \geq 0 \rightarrow m \geq -3 \cup m \leq 3 \rightarrow -3 \leq m \leq 3 \end{aligned}$$

$$D = \left[-\frac{3}{4}, +\infty \right)$$

$$g = \frac{r f m^r + r q m^r + r n + r}{(f m^r + f m + 1)^r} = \frac{r (1 m^r + 1 m^r + q m + 1)}{(r m + 1)^r} = \frac{r (r m + 1)^r}{(r m + 1)^r} = \frac{r}{r m + 1}$$

$$D = \mathbb{R} - \left\{ -\frac{1}{r} \right\}$$

$$f(m) = \begin{cases} \frac{a^r + m^r - m - r}{m^r - 1} & ; m \neq \pm 1 \\ \frac{a r + r}{m + b} & ; m = \pm 1 \end{cases}$$

$$g(m) = m + c$$

$$\frac{a^r + m^r - m - r}{m^r - 1} = \frac{m^r (m + r) - (m + r)}{m^r - 1} = \frac{(m + r) (m^r - 1)}{m^r - 1} = m + r \rightarrow m + r = m + c \rightarrow \boxed{c = r}$$

$$\begin{aligned} m=1 &\rightarrow \begin{cases} f(1) = \frac{a+r}{1+b} \\ g(1) = 1+r=r \end{cases} \rightarrow \frac{a+r}{1+b} = r \rightarrow a+r = r + rb \rightarrow rb - a = -1 \rightarrow \boxed{b = r} \\ m=-1 &\rightarrow \begin{cases} f(-1) = \frac{-a+r}{-1+b} \\ g(-1) = -1+r=r \end{cases} \rightarrow \frac{-a+r}{-1+b} = r \rightarrow r - a = b - 1 \rightarrow a + b = r \end{aligned}$$

$$f(m) = \frac{m+1}{m-c} \quad g(m) = \frac{m^r-1}{m^r+am+b} = \frac{(m-1)(m+1)}{m^r+am+b}$$

چون تابع برابر اند، حاصل (m-1) از صورت و حاصل (m-1) از مخرج زده شده همچنین چون تنها یک عدد در دانه f(m) نیست پس x در دانه ی g(m) هم فقط یک عدد باید داشته باشد در نتیجه به صورت (m-1)^r به دو باقی بماند m^r و a و b

$$(m-1)^r = m^r - r m + 1 = m^r + a m + b \rightarrow \boxed{a = -r} \quad \boxed{b = 1}$$

$$m-c = m-1 \rightarrow \boxed{c = 1} \rightarrow \boxed{a+b+c = 0}$$

$$f(m) = (m-r)^r (m-1)$$

$$f(m+1) = (m+1-r)^r (m+1-1) = (m-r)^r (m)$$

$$f(1-m) = (1-m-r)^r (m+1-1) = -(r-\alpha)^r (m) = -(-m-r)^r (m)$$

$$g(m) = f(m+1) + f(1-m) = (m-r)^r (m) + (- (m+r)^r (m)) = m ((m-r)^r - (m+r)^r) = \boxed{-m^r}$$

$$f(1-m) = \begin{cases} \sqrt{m} + r & ; m \leq 0 \\ r \sqrt{m} & ; m > 0 \end{cases}$$

$$\begin{aligned} 1-rm = -1 &\rightarrow m = 1 \rightarrow f(-1) = r \\ 1-rm = +r &\rightarrow m = -1 \rightarrow f(r) = -1+r = 1 \end{aligned}$$

$$f(-1) + f(r) = 2 \rightarrow \boxed{f(-1) + f(r) = 2}$$

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

$$n+\sqrt{n} = 4 \Rightarrow n+\sqrt{n}-4=0 \Rightarrow (\sqrt{n}-2)(\sqrt{n}+2)=0 \Rightarrow \sqrt{n}=2 \Rightarrow n=4$$

$$\Rightarrow f(4) = 4^{\frac{1}{2}} + 3(4) = 2 + 12 = 14$$

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

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

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

$$\left\{ \begin{array}{l} f(n-1) + f(1-n) = 0 \end{array} \right.$$

$$f(n) = \sqrt{fn - \frac{f}{n}} + K - 1 \xrightarrow{\text{حد}} fn - \frac{f}{n} \geq 0 \Rightarrow n \geq \frac{f}{K}a$$

$$g(n) = \sqrt{b - fn} + 3K \xrightarrow{\text{حد}} b - fn \geq 0 \Rightarrow n \leq \frac{b}{f}$$

$$2f - g = \left\{ (1, K) \right\} \rightarrow \text{با توجه به اینکه } f \text{ و } g \text{ دو تابع یکنوا هستند} \rightarrow \frac{f}{K}a = 1 \rightarrow \boxed{a = \frac{f}{K}}$$

همچنین باید عدد صحیح بزرگترین را پیدا کنیم.

$$\frac{b}{f} = 1 \rightarrow \boxed{b = f}$$

$$\left. \begin{array}{l} f(1) = \sqrt{f - \frac{f}{1}} + K - 1 = K - 1 \\ g(1) = \sqrt{f - f} + 3K = 3K \end{array} \right\} 2f - g(1) = 2K - 2 - 3K = -K \rightarrow \boxed{K = -1}$$

$$\frac{f}{K}a - \frac{b}{f} - K = \frac{f}{-1} - \frac{f}{f} - (-1) = -f - 1 + 1 = -f$$

$$f(n) = \sqrt{m-n} + n \rightarrow D = (-\infty, V]$$

$$g(n) = \sqrt{2n+2} \rightarrow D = [-1, +\infty)$$

$$D_{f \cap g} = \underbrace{D_f}_{(-\infty, m]} \cap \underbrace{D_g}_{[-1, +\infty)} = [-1, V] \rightarrow \boxed{m = V}$$

$$\left\{ \begin{array}{l} f(V) = \sqrt{V-V} + V = V \\ g(V) = \sqrt{2 \times V + 2} = \sqrt{2V+2} = \sqrt{2} \sqrt{V+1} \end{array} \right. \left\{ \begin{array}{l} f - g(V) = V - \sqrt{2} \sqrt{V+1} = 0 \Rightarrow \sqrt{2} \sqrt{V+1} = V \end{array} \right.$$

$$\boxed{m+n = V + \sqrt{2V+2} = V + \sqrt{2} \sqrt{V+1}}$$