

$$f(n) - n + 1 \geq 0 \Rightarrow f(n) \geq n - 1 \Rightarrow f(n) \begin{cases} \geq n - 1 & [n] \geq k \rightarrow n \geq \Delta \\ \leq k + 1 & [n] \leq k \rightarrow n < \Delta \end{cases} \quad (۱)$$

$$k + 1 \geq n - 1 \Rightarrow n \leq 2 \rightarrow n \geq \Delta$$

$$k + 1 \geq n - 1 \Rightarrow k \geq n - 2 \Rightarrow -\frac{k}{2} \leq n < \Delta \Rightarrow D_f = \left[-\frac{k}{2} + \infty \right)$$

$$\frac{k n^2 + k n + 1}{(k n^2 + k n + 1)^2} = \frac{k (1 n^2 + k n + 1)}{(k n + 1)^2} = \frac{k (k n + 1)^2}{(k n + 1)^2} = 1 \quad (۲)$$

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

$$f(n) = \begin{cases} \frac{n^2 + k n^2 - n - 1}{n^2 - 1} & n \neq \pm 1 \\ \frac{a n + k}{n + b} & n = \pm 1 \end{cases} \quad g(n) = n + C \quad (۳)$$

$$f(0) = k \Rightarrow g(0) = k \Rightarrow 0 + C = k \Rightarrow C = k \Rightarrow g(n) = n + k$$

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

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

$$k b - a = -1$$

$$b + C = \frac{1}{k} + k = \frac{1 + k^2}{k}$$

$$k b = 1 \Rightarrow b = \frac{1}{k}, a = \frac{1 + k^2}{k}$$

$$f(n) = \frac{n+1}{n-1} \quad g(n) = \frac{(n+1)(n-1)}{n^2 - 1} \Rightarrow \text{چون در تابع برابرند پس خارج می‌باشد}$$

یک ریشه مضاعف داشته باشد و یکی از عبارات‌ها با صورت ساده شود

$$n^2 - n + 1 = (n-1)^2 = n^2 - 2n + 1 \Rightarrow a = -2, b = 1, C = 1 \Rightarrow a + b + C = 1 + 1 - 2 = 0$$

$$f(n) = (n-r)^r (n-1) \quad g(n) = f(n+1) + f(1-n) \rightarrow -\omega$$

$$f(n+1) = \underbrace{[(n+1)-r]^r}_{(n-r)^r} \underbrace{[(n+1)-1]}_n = (n-r)^r (n) = (n^r - rn + r)(n) = n^r - rn^r + rn \quad (r)$$

$$f(1-n) = \underbrace{[(1-n)-r]^r}_{(-n-r)^r} \underbrace{[(1-n)-1]}_{-n} = (n^r + rn + r)(-n) = -n^r - rn^r - rn$$

$$g(n) = n^r - rn^r + rn - n^r - rn^r - rn = -2n^r \quad \checkmark$$

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

$$f(-1) \rightarrow 1-rn = -1 \Rightarrow rn = r \Rightarrow n = 1 \Rightarrow f(-1) = r\sqrt{1} = r \quad (r) -y$$

$$f(r) \rightarrow 1-rn = r \Rightarrow rn = -r \Rightarrow n = -1 \Rightarrow f(r) = r\sqrt{-1} + r = 1$$

$$f(-1) + f(r) = 1 + r \quad \checkmark$$

$$f(n + \sqrt{n}) = n^r + rn \rightarrow f(y) \rightarrow y = n + \sqrt{n} \rightarrow n + \sqrt{n} - y = 0 \Rightarrow n = r \quad \checkmark -v$$

$$f(y) = r^r + r(r) = r^2 + r = r(r+1) \quad (r)$$

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

$$(n-1)^r + n - 1 - (n-1)^r + 1 - n = 0 \quad \checkmark (r)$$

$$f(n) = \sqrt{kn - ka} + k - 1 \quad g(n) = \sqrt{b - kn} + rk \quad rf - g = f(1, k) \quad -g$$

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

$$\begin{cases} kn - ka \geq 0 \rightarrow kn \geq ka \Rightarrow n \geq \frac{ka}{k} = a \\ b - kn \geq 0 \rightarrow kn \leq b \Rightarrow n \leq \frac{b}{k} \end{cases} \xrightarrow{! = \text{nil}} \frac{ka}{k} = \frac{b}{k} = 1 \Rightarrow b = k, a = \frac{k}{r} \quad \checkmark$$

$$rf - g = r(\sqrt{k - ka} + k - 1) - (\sqrt{b - k} + rk) = r\sqrt{k - ka} + rk - r - \sqrt{b - k} - rk = k \Rightarrow$$

$$r\sqrt{k - ka} - \sqrt{b - k} = rk + r \xrightarrow{a = \frac{k}{r}, b = k} 0 - 0 = rk + r \Rightarrow rk = -r, k = -1 \quad \checkmark$$

$$ka - \frac{b}{r} - k = r\left(\frac{k}{r}\right) - \frac{k}{r} - (-1) = r \quad \checkmark$$

$$f(n) = \sqrt{m-n} + n \quad g(n) = \sqrt{2n+2} \quad D_{f \circ g} = [-1, 1] \quad -10$$

$$f - g(x) = 4\sqrt{2} \quad 2n+2 \geq 0 \Rightarrow n \geq -1$$

$$m-n \geq 0 \Rightarrow n \leq m \xrightarrow{\text{بأنه بـ 1}} m = 1$$

$$f - g(x) = 4\sqrt{2} \rightarrow f - 2\sqrt{2} = 4\sqrt{2} \Rightarrow f = 6\sqrt{2} \Rightarrow$$

$$\underbrace{\sqrt{1-3}}_{\sqrt{2}=2} + n = 6\sqrt{2} \Rightarrow n = 6\sqrt{2} - 2 \rightarrow m+n = 1 + 6\sqrt{2} - 2 - 2 = \underline{5 + 6\sqrt{2}}$$