

(1)

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

$$f(n) = \begin{cases} r_{n-1} & ; [n] > r \\ r_{n+r} & ; [n] \leq r \end{cases}$$

با توجه به تعریف $[n]$ داریم

$$[n] > r \Rightarrow \sqrt{r_{n-1} - n + 1} = \sqrt{n} \Rightarrow n \geq 0$$

$$[n] \leq r \Rightarrow \sqrt{r_{n+r} - n + 1} = \sqrt{r_{n+r}}$$

$$r_{n+r} \geq 0 \Rightarrow r_n \geq -r \Rightarrow n > -\frac{r}{p}$$

$$\Rightarrow D = \left[-\frac{r}{p}, +\infty\right)$$

$$y = \frac{r_{n+r} + r_{n+r} + 1 + n + r}{(r_{n+r} + r_{n+r})^r} = \frac{r(1 + n^r + 1 + n + r)}{(r_{n+r})^r} \quad (1)$$

$$\Rightarrow \frac{r(r_{n+r})^r}{(r_{n+r})^r} = \frac{r}{r_{n+r}} \quad r_{n+r} \neq 0$$

$$\Downarrow$$

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

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

$$f(n) = \begin{cases} \frac{n^r + r_{n+r} - n - r}{n^r - 1} & ; n \neq \pm 1 \xrightarrow{n=0} \frac{-r}{-1} = r \quad (1) \end{cases}$$

$$\frac{an + r}{n + b} \quad ; n = \pm 1 \xrightarrow{n=+1} \frac{a+r}{1+b}$$

$$\xrightarrow{n=-1} \frac{-a+r}{b-1}$$

$$b+c = \frac{1}{r} + \frac{r}{p} = \left(\frac{a}{r}\right)$$

$$g(n) = n + c \Rightarrow c = 1$$

$$r + r b = a + r$$

$$b+c = ?$$

$$r b - a = -1$$

$$b + a = r$$

$$b = r$$

$$\Rightarrow b = \frac{1}{r}$$

$$\xrightarrow{n=+1} r = \frac{a+r}{1+b}$$

Scbo

$$1 = \frac{r-a}{b-1} \Rightarrow b-1 = r-a$$

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

$$a+b+c=?$$

در صورتی که دو تابع برابر باشند دایره آنها نیز برابر است

$$\Rightarrow n-c \neq 0 \Rightarrow n \neq c \quad \Rightarrow c^2+ac+b=9$$

که معادله درجه ۲

$$\Delta = 0 \quad c = \text{دارای ریشه مضاعف}$$

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

صورت و مخرج ضمیمه $(n-1)$ شده $\Rightarrow (n-c)(n-1) =$ معادله درجه ۲ با ریشه مضاعف

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

$a = -2$ $b = 1$ $-2+1+1=0$
 $a+b+c$

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

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

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

$$\cancel{n^3} + 4n - 4n^2 - \cancel{n^3} + 4n^2 - 4n = 0$$

$$f(1-\sqrt[n]{n}) = \begin{cases} \sqrt[n]{n} + 1 & ; n \leq 0 \\ \varepsilon \sqrt[n]{n} & ; n > 0 \end{cases} \quad (4)$$

$$f(-1) + f(n) = \underbrace{f+1 = 0}$$

$$1 - \sqrt[n]{n} = -1 \Rightarrow \sqrt[n]{n} = 1 \Rightarrow n = 1$$

$$1 - \sqrt[n]{n} = \varepsilon \Rightarrow -\sqrt[n]{n} = \varepsilon \Rightarrow n = -1$$

$$f(-1) = \varepsilon \sqrt{-1} = \varepsilon$$

$$f(n) = \sqrt[n]{-1} + 1 = \varepsilon - 1 = 1$$

$$f(n + \sqrt[n]{n}) = n^{\varepsilon} + \sqrt[n]{n} \quad f(4) = ? \quad (v)$$

$$n + \sqrt[n]{n} = 4$$

$$\sqrt[n]{n} = t$$

$$t^{\varepsilon} + t - 4 = 0$$

$$(t + \varepsilon)(t - \varepsilon) = 0 \Rightarrow \sqrt[n]{n} = \varepsilon \Rightarrow n = \varepsilon$$

$$t = -\varepsilon \text{ or } \varepsilon \quad t = \varepsilon$$

$$f(4) = (\varepsilon)^{\varepsilon} + \sqrt[\varepsilon]{\varepsilon} = \varepsilon \varepsilon + 1 \varepsilon = \varepsilon \varepsilon 1$$

$$f(n) = n^{\varepsilon} + n \quad (1)$$

$$f(n-1) + f(1-n)$$

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

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

$$f(n-1) + f(1-n) = \cancel{n^{\varepsilon}} + \cancel{\varepsilon n} - \cancel{\varepsilon n^{\varepsilon}} - \cancel{\varepsilon} - \cancel{n^{\varepsilon}} - \cancel{\varepsilon n} + \cancel{\varepsilon n^{\varepsilon}} + \cancel{\varepsilon} = 0$$

$$f(x) = \sqrt{x-3a} + k - 1$$

(9)

$$g(x) = \sqrt{b-x} + 3k$$

$$f - g = \{(1, k)\}$$

عدد صغری ضرب در ۳
 $f - g(x) = \sqrt{x-3a} - \sqrt{b-x} + k - 3k = -2k$
 $-2k = 0 \Rightarrow k = 0$

$$3a - \frac{b}{3} - k = 0$$

باقی به خودت بماند

$$Dg = (-\infty, 1]$$

$$Df \cap Dg = \{1\}$$

$$Df = [1, +\infty)$$

$$x-3a \geq 0$$

$$\Rightarrow -\frac{1}{3} +$$

$$x-3a=0 \Rightarrow a = \frac{x}{3}$$

$$b-x \geq 0 \Rightarrow \frac{1}{+} \frac{1}{-}$$

$$b-x=0 \Rightarrow b=x$$

$$3\left(\frac{x}{3}\right) - \frac{x}{3} - (-1) = 0$$

$$x-2+1=0 \Rightarrow x=1$$

$$f(1) = \sqrt{1-3a} + k - 1$$

$$= k - 2$$

$$g(1) = \sqrt{b-1} + 3k$$

$$= 3k$$

$$f - g = k - 2 - 3k = -2k - 2$$

$$-2k - 2 = 0 \Rightarrow k = -1$$

$$\Rightarrow k = -1$$

$$g(m) = \sqrt{m+1}$$

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

$$m+n = \sqrt{m+1} + \sqrt{n-1} = \sqrt{m+1} + \sqrt{m+1} = 2\sqrt{m+1}$$

$$Df \times Dg = [-1, 1]$$

$$Df \cap Dg = [-1, 1]$$

$$f - g(n) = \sqrt{n-1} - \sqrt{n+1}$$

$$Dg \Rightarrow \sqrt{n+1} \geq 0 \Rightarrow n \geq -1$$

$$n = \sqrt{m+1} - 1$$

$$\Rightarrow \frac{1}{-} \frac{1}{+}$$

$$Dg = [-1, +\infty)$$

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

$$n+1 = \sqrt{m+1}$$

$$Df = [-\infty, 1]$$

$$g(n) = \sqrt{n+1} \Rightarrow \sqrt{n+1} - \sqrt{n+1} = 0$$

$$m-1=0$$

$$\Rightarrow m=1$$