

بجایابی $k = 4$ به عبارت $f(n) = (n+1)^2 + (n-1)^2 + mn^2 + hn + mn = 4$

$$\Rightarrow n^2 + 2n + 1 + n^2 - 2n + 1 + mn^2 + hn + mn = 4 \Rightarrow (m+2)n^2 + (h-2)n + m + n = 4$$

$\Rightarrow m+2 = 0 \Rightarrow m = -2$ و $h-2 = 0 \Rightarrow h = 2$ و $m+n = 4 \Rightarrow -2+n = 4 \Rightarrow n = 6$

بنابراین $k = 10$ و $m = -2$ و $n = 6$

بنابراین $g(n) = \left\{ (1, 0), (0, 1), (2, -1), (-2, 1) \right\}$

بنابراین $g(n) = \left\{ (1, 0), (0, 1), (2, -1), (-2, 1) \right\}$

بنابراین $g(n) = \left\{ (1, 0), (0, 1), (2, -1), (-2, 1) \right\}$

الف) $y = \sqrt{\frac{n-2}{n^2-2n^2-1}} \Rightarrow \frac{n-2}{(n^2-4)(n^2+2)} > 0$

$D_y = (-2, 2) \cup (2, +\infty)$

ب) $\frac{2n^2+1}{4-2[-n]} \Rightarrow 4-2[-n] = 0 \Rightarrow 2[-n] = 4 \Rightarrow [-n] = 2$

$\Rightarrow -n \in [2, 3) \Rightarrow n \in (-3, -2] \Rightarrow D_f = R - (-3, -2]$

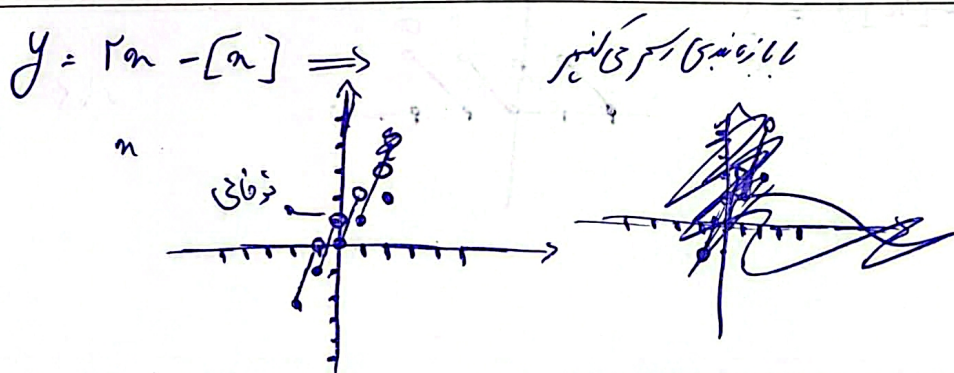
الف) $f(n) = \sqrt{n(n^2-1)} \Rightarrow n(n-1)(n+1) > 0 \Rightarrow \frac{-1}{-1} + \frac{0}{0} + \frac{1}{1} = 0$

$\Rightarrow D_f = [1, +\infty)$

ب) $\frac{\sqrt{|n-2|-n^2}}{|n|-1} \Rightarrow \frac{-2}{-1} + \frac{1}{1} = 0 \Rightarrow D_f = [-2, -1) \cup (-1, 1)$

$y = \frac{1}{||n-2|-1|-k} \Rightarrow ||n-2|-1| = k$

بنابراین $k = 1$



$$f(n) = \frac{n^r - (n+r)}{n+a} + b = n \Rightarrow \frac{(n-1)(n-r)}{n+a} + b = n$$

$$\Rightarrow \text{I) } a = -1 \Rightarrow b = r \quad \text{II) } a = -r \Rightarrow b = 1$$

$$\Rightarrow \text{I) } a - b = -1 - r = -r \quad \text{II) } a - b = -r - 1 = -r \Rightarrow \{-r\}$$

$$f(n) = \begin{cases} \frac{n^r + r n^r - n - r}{n^r - 1} & ; n \neq \pm 1 \\ \frac{a n + r}{n + b} & ; n = \pm 1 \end{cases} \quad g(n) = n + c \quad \begin{matrix} b=1 \Rightarrow b=1 \\ b=r \Rightarrow b=r \end{matrix}$$

$\boxed{b+c = \frac{1+r}{r} = \frac{a}{r}}$

$\frac{n^r(n+r) - 1(n+r)}{n^r - 1} = \frac{(n^r - 1)(n+r)}{(n^r - 1)} = n+r = n+c \Rightarrow c=r$

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

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

$\mathbb{R} \times \mathbb{R}$

$$D_{f \times g} = [-1, v] \Rightarrow D_f \cap D_g = [-1, v] \quad D_g = [-1, +\infty)$$

$$\Rightarrow D_f = (-\infty, v] \xrightarrow{\sqrt{m-n}} \sqrt{m-n} \Rightarrow m=v$$

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

$$\sqrt{m-r} + n = r\sqrt{r} \Rightarrow r+n = r\sqrt{r} \quad n = r\sqrt{r} - r$$

$$\Rightarrow m+n = r\sqrt{r} - r + v = r\sqrt{r} + v$$

$$y = (-1)^r (x - [x]) = \frac{1}{r}$$

$$D = [-r, r]$$

