

طبیعی n ، $f(-n) - n f(n) = 2|n| + 1$ $\left\{ \begin{array}{l} f(n) \\ f(-n) - n f(n) = 2|n| + 1 \end{array} \right. \xrightarrow{x=n} -n f(-n) + n^2 f(n) = -2|n|n - n$

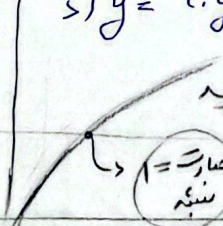
II, I ع.ع. $(1+n)f(n) = 2|-n| + 1 - 2|n|n - n \xrightarrow{n>0} (1+n)f(n) = -2n^2 + n + 1$ $\xrightarrow{n<0} (1-n)f(n) = -2n^2 - n + 1$

$$f(n) = \begin{cases} \frac{-2n^2 + n + 1}{n^2 + 1} & n > 0 \\ \frac{+2n^2 - n + 1}{n^2 + 1} & n < 0 \end{cases}$$

$f(0) = 4 \rightarrow f(0) = 3 \rightarrow f(n) + 3 = n^2 - 3n + 4 + 3 \xrightarrow{x^2} (n^2 - 3n + 3)$

$y^n - y = n^2 + n + 1 \rightarrow n^2 + (1-y)n + 1 + y$ $\Delta \rightarrow n = y - 1 \pm \sqrt{y^2 - 4y + 1 - n - \varepsilon y}$ $y^2 - 4y - 1 \geq 0 \rightarrow y \in (-\infty, -1] \cup [5, +\infty)$

الف) $y = \sqrt{n^2 - 2n + 1}$ $\rightarrow \text{ent} \left\{ \begin{array}{l} \frac{\Delta}{2} \\ -\frac{11}{n} \end{array} \right. \quad \mathbb{R}_f = [-\frac{11}{n}, +\infty)$ $-9 + 11 - n - 1 \rightarrow y = \sqrt{-n^2 + 4n - 9}$ $\text{ent} \left\{ \begin{array}{l} 3 \\ \varepsilon \end{array} \right. \quad \mathbb{R}_f = (-\infty, \varepsilon] \rightarrow [0, 2]$

8) $y = \sqrt{n^2 - 3n^2 + \varepsilon n + 1}$ $\mathbb{R} \xrightarrow{\text{ایست}} [0, +\infty)$ $y = (g(n^2 - 4n^2 + 7n + \varepsilon))$ 

الف) $\frac{3n+1}{n-4} \rightarrow \mathbb{R} \xrightarrow{\text{ایست}} \mathbb{R} - \{ \frac{3}{7} \}$ $y = \sqrt{\frac{\varepsilon n + 1}{n - 2}}$ $\mathbb{R} - \{ \varepsilon \} \xrightarrow{\text{ایست}} [0, +\infty) - \{ 2 \}$ $y = \frac{n^2 + \varepsilon}{\sqrt{n^2 + 3}}$ $\mathbb{R} \xrightarrow{\text{ایست}} \mathbb{R} - \{ 2 \}$

$y = n^2 + \frac{1}{n^2 + \varepsilon} \rightarrow n^2 + \varepsilon + \frac{1}{n^2 + \varepsilon} - 2$ $\min \rightarrow \sqrt{3} + \frac{1}{\sqrt{3}} = \left(\frac{4}{\sqrt{3}} \right) - \left\{ \frac{4}{\sqrt{3}}, +\infty \right\}$ $t \geq \frac{\varepsilon + 1}{\varepsilon} \xrightarrow{+} t - \varepsilon \geq \frac{1}{\varepsilon} \quad \mathbb{R}_f = [\frac{1}{\varepsilon}, +\infty)$

4- برآورد $\frac{3n+1}{n^2-1}$ $\frac{3n+1}{n^2-1}$ $\frac{3n+1}{n^2-1}$

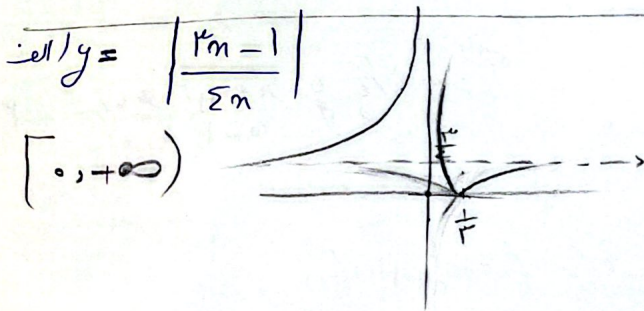
برآورد $y n^2 - y = 3n^2 + 1 \rightarrow n^2(y-3) = y+1 \rightarrow n^2 = \frac{y+1}{y-3}$

$\frac{-1}{3} \quad \frac{1}{3} \rightarrow \mathcal{D}_f = (-\infty, -\frac{1}{3}] \cup (\frac{1}{3}, +\infty)$

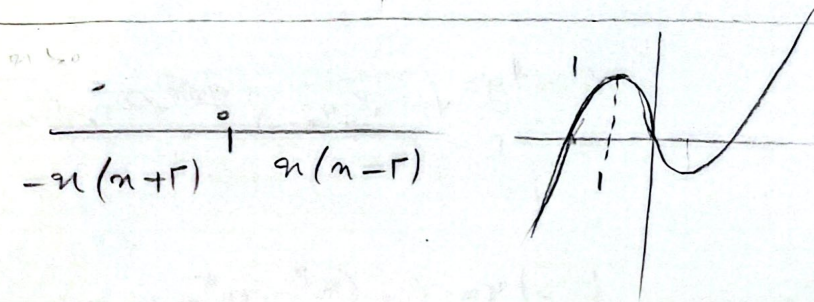
min $\rightarrow 0 \rightarrow \frac{1}{-1} = -1$
 max $\rightarrow +\infty \rightarrow \frac{3(+\infty)+1}{(+\infty)-1} = 3$
 خارج میزنند $\mathcal{D}_f = (-\infty, -1] \cup (3, +\infty)$

$\sin n \rightarrow 1 = \frac{4}{-1} = -4$
 $\rightarrow -1 \rightarrow \frac{1}{-1} = -1$
 $\mathcal{D}_f = [-4, -\frac{1}{1}]$

$\mathcal{D}_f(n) = \frac{3 \sin n + 1}{\sin n - 4}$
 قرع $\neq$



ب $y = \sqrt{\frac{9n-1}{-1+2n}} \rightarrow \sqrt{\frac{9(n-\frac{1}{9})}{2(n-\frac{1}{2})}}$
 $n \neq \frac{1}{2} \rightarrow \sqrt{\frac{9}{2}} = \frac{3}{\sqrt{2}}$



9- برآورد $y = \frac{n}{|n-1|} - 2n$
 $(\mathbb{R})$

