

نام و نام خانوادگی الفبای کلاس شماره پاسخنامه تشریحی تکلیف شماره B

$$f(-n) - n f(n) = 2|n| + 1 \xrightarrow{x(-n)} -n f(-n) + n^2 f(n) = -2n|n| - n + 1, \quad f(n)?$$

$$\xrightarrow{\text{مع.}} f(n) + n f(-n) = 2|n| + 1$$

$$(n^2 + 1) f(n) = (2 - 2n)|n| - n + 1$$

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

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

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

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

$$y = \frac{n^2 + n + 2}{n - 1} \rightarrow yn - y = n^2 + n + 2 \rightarrow n^2 + n - yn + 2 + y = 0 \quad R?$$

$$n^2 + n(1 - y) + 2 + y \rightarrow n = \frac{-(1 - y) \pm \sqrt{(1 - y)^2 - 4(2 + y)}}{2}$$

$$(1 - y)^2 - 4(2 + y) \geq 0 \rightarrow y^2 + 1 - 2y - 8 - 4y \geq 0 \rightarrow y^2 - 4y - 7 \geq 0$$

$$(y - 7)(y + 1) \geq 0 \rightarrow \frac{-1}{+} \frac{7}{-} \rightarrow R_f = (-\infty, -1] \cup [7, +\infty)$$

$$\text{الف) } y = 2n^2 - 5n + 1 \quad \checkmark$$

$$\min \begin{cases} -\frac{b}{2a} = \frac{5}{4} \\ -\frac{\Delta}{4a} = \frac{17}{4} \end{cases} = -\frac{17}{4} \rightarrow R = [-\frac{17}{4}, +\infty)$$

$$y = \sqrt{-n^2 + 4n - 5} \quad \checkmark$$

$$\begin{cases} -\frac{b}{2a} = 2 \\ -\frac{\Delta}{4a} = 4 \end{cases} \rightarrow R_{\sqrt{-n^2 + 4n - 5}} = (-\infty, 4]$$

$$R_{\sqrt{-n^2 + 4n - 5}} = [0, 2]$$

$$g) y = \sqrt{n^2 - 4n^2 + 5n + 1} \rightarrow R = \mathbb{R} \leftarrow \text{توان غیر}$$

$$y = \log n^2 - 4n^2 + 5n + 1 \rightarrow R_{n^2 - 4n^2 + 5n + 1} = \mathbb{R}$$

$$R_{\sqrt{n^2 - 4n^2 + 5n + 1}} = [0, +\infty)$$

$$R_f = \mathbb{R} \leftarrow \log$$

$$\text{الف) } y = \frac{3n + 1}{2n - 4} \quad \checkmark \quad R = \mathbb{R} - \left\{ \frac{3}{2} \right\}$$

$$y = \sqrt{\frac{5n + 1}{n - 2}} \quad \checkmark \quad R = \mathbb{R} - \{2\}$$

$$R_{\sqrt{\frac{5n + 1}{n - 2}}} = [0, +\infty) - \{2\}$$

$$g) y = \frac{n^2 + 3}{\sqrt{n^2 + 3}} = \frac{n^2 + 3}{\sqrt{n^2 + 3}} = \sqrt{n^2 + 3} + \frac{1}{\sqrt{n^2 + 3}}$$

$$\min(n^2 + 3) = 3 \rightarrow R_{\sqrt{n^2 + 3}} = [2, +\infty)$$

$$R_{\frac{1}{\sqrt{n^2 + 3}}} = \left(0, \frac{1}{2}\right]$$

$$R = \left[\frac{1}{2}, +\infty\right)$$

$$y = \frac{3n^2 + \varepsilon}{n^2 - 1} \rightarrow y(n^2) - y = \frac{3n^2 + \varepsilon}{n^2 - 1} \rightarrow (3 - y)n^2 + \varepsilon + y = 0 \rightarrow n^2 = \frac{\varepsilon + y}{y - 3}$$

$$\frac{\varepsilon + y}{y - 3} \geq 0 \rightarrow \frac{-\varepsilon}{y - 3} \rightarrow R = (-\infty, -\varepsilon] \cup (3, +\infty)$$

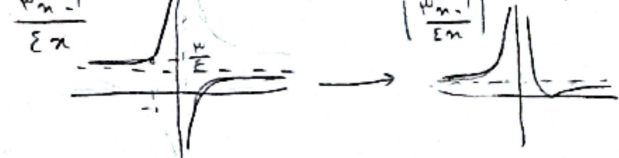
$$y = \frac{3n^2 + \varepsilon}{n^2 - 1} \begin{cases} \min n^2 = 0 \\ \max n^2 = +\infty \end{cases} \begin{cases} \frac{\varepsilon}{-1} = -\varepsilon \\ \frac{\varepsilon}{+\infty} = 0 \end{cases} \begin{matrix} \text{منحني قوسى} \\ \text{صفر شدن دارد} \\ n = \pm 1 \end{matrix} R = (-\infty, -\varepsilon] \cup (3, +\infty)$$

$$f(n) = \frac{r \sin n + \varepsilon}{\sin n - 3} \begin{cases} \min \sin n = -1 \rightarrow -\frac{1}{r} \\ \max \sin n = 1 \rightarrow -3 \end{cases} \begin{matrix} \text{منحني قوسى} \\ \text{صفر شدن دارد} \end{matrix} R_f = [-3, -\frac{1}{r}]$$

$$y = \left| \frac{3n-1}{\varepsilon n} \right| =$$

$$\begin{cases} \text{مجازه} = 0 \\ \text{مجازه} = \frac{3}{\varepsilon} \end{cases}$$

$$R = [0, +\infty)$$

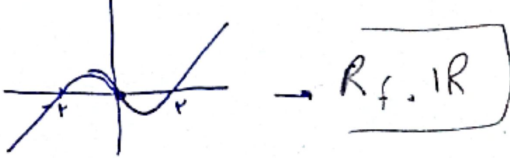


$$y = \sqrt{\frac{9n-18}{-n+\varepsilon n}}$$

$$\frac{9n-18}{-n+\varepsilon n} = \frac{9(n-2)}{\varepsilon(n-2)} = \frac{9}{\varepsilon}$$

$$R \sqrt{\frac{9n-18}{-n+\varepsilon n}} = \sqrt{\frac{9}{\varepsilon}} = \frac{3}{\sqrt{\varepsilon}}$$

$$y = n|n| - 2n \rightarrow \begin{cases} n^2 - 2n & n \geq 0 \\ -n^2 - 2n & n < 0 \end{cases}$$



$$f(n)$$

$$f(|n|)$$

$$f(|n|/4)$$

$$|f(n)/4|$$

