

نام و نام خانوادگی ... شماره ... کلاس ... پاسخنامه تشریحی تکلیف شماره ...

$$f(n) = \sqrt{n+2}\sqrt{n-2} = \sqrt{n-2+2}\sqrt{n-2+2} = \sqrt{(\sqrt{n-2}+2)^2} = |\sqrt{n-2}+2| \xrightarrow{n \geq 1} \sqrt{n-2}+2$$

$$g(n) = \sqrt{n-2}\sqrt{n-2} = \sqrt{n-2-2}\sqrt{n-2-2} = \sqrt{(\sqrt{n-2}-2)^2} = |\sqrt{n-2}-2| \xrightarrow{n \geq 1} \sqrt{n-2}-2$$

$$f(n) + g(n) = \sqrt{n-2}+2 + \sqrt{n-2}-2 = 2\sqrt{n-2} = a + b\sqrt{n+c} \rightarrow \begin{matrix} a=0 \\ b=2 \\ c=-2 \end{matrix}$$

$$\frac{a+b}{c} = \frac{2+0}{-2} = -\frac{1}{1}$$

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$g/f \rightarrow f \neq 0$ هر دو تعریف شده باشند
 $f(n) = \frac{n+2}{n^2-2n+3}$ $\begin{cases} n \neq -2 & (\text{ریشه صورت}) \\ n \neq 1, 3 & (\text{ریشه مخرج}) \end{cases}$
 $f(2) = -\frac{4}{5} \quad f(5) = \frac{7}{13}$

$g/f: \left\{ \left(2, -\frac{4}{5}\right), \left(5, \frac{7}{13}\right) \right\}$

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الف) $f(2n): \left\{ \left(\frac{1}{2}, 2\right), \left(\frac{3}{2}, -1\right), \left(2, 2\right), \left(-\frac{1}{2}, 6\right) \right\}$
 ب) $f(n^2): \left\{ (1, 2), (\sqrt{3}, -1), (2, 2) \right\}$
 ج) $2g(n)+1: \left\{ (1, 9), (3, 3), (4, 9), (-1, 7) \right\}$
 د) $2f/g: \left\{ (1, -4), (3, -1) \right\}$

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$2f(n): \left\{ (2, 2), (3, 2), (4, 1), (-2, 0) \right\}$
 $h: 2f+g: \left\{ (-2, 6), (2, 0), (3, 0) \right\}$

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$\left(\frac{f}{g+1}\right)(n) \begin{cases} \text{① ریشه مخرج} \rightarrow [n], [-n] \rightarrow \begin{matrix} n \in 2 \rightarrow 0 \checkmark \\ n \notin 2 \rightarrow -1 \times \end{matrix} \rightarrow \text{مخرج صفری کند} \\ \text{② تابع } f \rightarrow \begin{cases} 1 \rightarrow n \neq -2 \\ 2 \rightarrow 2n \geq 0 \rightarrow n \geq 0 \\ 3 \rightarrow \sqrt{3n} - n \geq 0 \rightarrow \sqrt{3n} \geq n \rightarrow 2n \geq n^2 \rightarrow n^2 - 2n \leq 0 \rightarrow \begin{matrix} 0 & 3 \\ + & - \\ 0 & 2 \end{matrix} \end{cases} \end{cases}$

$n \rightarrow D: \{n | 0 \leq n \leq 3, n \neq 2, n \in 2\}$
 $D: \{0, 1, 3\}$

$$f(n) \cdot \sqrt{\omega n \cdot n^2} \rightarrow n^2 \cdot \omega n \cdot n^2 \leq 0 \rightarrow \frac{1}{+} \frac{1}{-} \frac{1}{-} \frac{1}{+} \rightarrow [1 \ 4] \cdot D_f$$

$$h(n) = \frac{f(n)}{g(n)} \cdot \{(1, 0), (2, \sqrt{2/3}), (3, 0)\}$$

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الف) $y = n^2 - 2n^2 + 2n \rightarrow n^2 - 2n^2 + 2n - 1 \rightarrow y - 1 = (n-1)^2 \rightarrow n = \sqrt{y-1} + 1$
 $\leftarrow$ محدود بین اعداد نمی کند $\leftarrow R: (-\infty + \infty)$ بر

ب) $y = \frac{1}{n^2 - 2n + 1 - 1} \rightarrow y = \frac{1}{(n-1)^2 - 1} \rightarrow y(n-1)^2 - y = 1 \rightarrow y(n-1)^2 = y+1 \rightarrow (n-1)^2 = \frac{y+1}{y}$
 $n = \sqrt{\frac{y+1}{y}} + 1 \rightarrow \frac{y+1}{y} \geq 0 \rightarrow \frac{1}{+} \frac{1}{+} \frac{1}{+} \frac{1}{+} \rightarrow R: (-\infty - 1] \cup (0 + \infty)$

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الف) $y = n^2 - 4n + 10 \rightarrow n_s = \frac{4}{2} = 2, y_s = 4 - 8 + 10 = 6 \rightarrow R: [6 + \infty)$

ب) $y = -n^2 + 4n + 3 \rightarrow n_s = \frac{-4}{-2} = 2 \rightarrow y_s = -9 + 8 + 3 = 2 \rightarrow R: (-\infty 12]$

ج) $y = \sqrt{n^2 - 4n - 3} \rightarrow n_s = \frac{4}{2} = 2, y_s = -5 \rightarrow R: \sqrt{[-5 + \infty)} : [0 + \infty)$

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د) $y = \sqrt{-n^2 + 4n} \rightarrow n_s = \frac{4}{2} = 2, y_s = -9 + 8 = -1 \rightarrow R: \sqrt{(-\infty 1]}, [0 + \infty)$

الف) $y = n^2 - \omega n^2 + 2n + 1 \rightarrow R: (-\infty + \infty)$

ب) $y = n^2 - 4n^2 + 2n + 2 \rightarrow R: (-\infty + \infty)$

ج) $y = \sqrt{n^2 - 4n^2 + \omega n + 1} \rightarrow R: \sqrt{(-\infty + \infty)} = [0 + \infty)$

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د) $y = (n^2 - 4n^2 + 2n + 1)^2 \rightarrow R: (-\infty + \infty) = [0 + \infty)$

الف) $y = \frac{2n+1}{n-2} \rightarrow R_f: \mathbb{R} - \{2\}$

ب) $y = \frac{2n+1}{n+1} \rightarrow R_f: \mathbb{R} - \{1\}$

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