

نام و نام خانوادگی: هجرت: باسخرامه تشریحی تکلیف شماره ۲۰۰ کلاس: (ب) ...

۱۹۲۵

معادله

$$(f(-n) - n f(n) = 2|n| + 1) \times n$$

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

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

(۱,۵)

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

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

۱

$$(f(n) + n f(-n) = 2|n| + 1) \times -1$$

معادله

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

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

$$f(n) + f(0) = n^2 - 2n + 4$$

(۲)

$$n=0 \rightarrow 2 f(0) = 4 \rightarrow f(0) = 2$$

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

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

$$y = \frac{n^2 + n + 2}{n-1} \rightarrow y n - y = n^2 + n + 2 \rightarrow n^2 + n - y n + 2 + y = 0$$

(۳)

$$\rightarrow n^2 + (1-y)n + 2+y = 0$$

۳

$$n = \frac{-1+y \pm \sqrt{(1-y)^2 - 4(2+y)}}{2} \rightarrow (1-y)^2 - 4(2+y) \geq 0 \rightarrow 1 - 2y + y^2 - 8 - 4y \geq 0$$

$$\rightarrow y^2 - 6y - 7 \geq 0 \rightarrow y \geq 7 \text{ or } y \leq -1 \Rightarrow R = \mathbb{R} - (-1, 7)$$

$$\text{الف) } \frac{-b}{2a} = \frac{-(-\omega)}{2 \times 2} = \frac{\omega}{4}$$

$$\text{ب) } \frac{-b}{2a} = 2 \rightarrow -4 + 11 - \omega = 2$$

$$\text{ج) } \frac{-b}{2a} = 2 \rightarrow -4 + 11 - \omega = 2$$

(۱,۵)

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

$$R = \sqrt{(-\infty, 8]} = [-2, 8]$$

$$\Rightarrow R = \mathbb{R}$$

$$2 \times \frac{\omega}{2} - \frac{\omega}{2} + 1 = \frac{-11}{\lambda}$$

$$R = [-\frac{11}{\lambda}, +\infty)$$

$$\text{د) } y = \log(n^2 - 4n^2 + 6n + 8)$$

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$$\text{نیز } R = \mathbb{R}$$

$$\text{الف) } 2x - 9 \neq 1 \times 2$$

$$R = \mathbb{R} - \{ \frac{11}{2} \}$$

$$\text{ب) } \frac{2x+3}{\sqrt{2x^2+3}} + \frac{1}{\sqrt{2x^2+3}} = \frac{a+1}{a} \quad R: [\frac{5\sqrt{2}}{2}, +\infty)$$

(۱,۵)

$$\text{ج) } \min a = \min \sqrt{2x^2+3} = \sqrt{3} \rightarrow \sqrt{3} + \frac{1}{\sqrt{3}} = \frac{4\sqrt{3}}{3}$$

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$$\text{د) } -2x \neq 1 \times 1$$

$$R = \sqrt{\mathbb{R} - \{ \frac{1}{2} \}} = [1, +\infty) - \{ \frac{1}{2} \}$$

$$\text{ه) } 2x^2 + 8 + \frac{1}{2x^2+8} - 8 = a + \frac{1}{a} - 8, a > 0$$

$$\min a = \min 2x^2 + 8 = 8 \rightarrow 8 + \frac{1}{8} - 8 = \frac{1}{8} \quad R: [\frac{1}{8}, +\infty)$$

$$R_f = [\frac{1}{8}, +\infty)$$

$$x^2 + \varepsilon = yx^2 - y \rightarrow x^2 = \frac{y+\varepsilon}{y-1} \rightarrow x = \sqrt{\frac{y+\varepsilon}{y-1}} \quad \checkmark \quad \frac{y}{|+1-\frac{\varepsilon}{y}|} \quad (2)$$

$$\frac{x^2 + \varepsilon}{x^2 - 1} = \frac{x^2 + \varepsilon}{x^2 - 1} \xrightarrow{x^2 = 1} \frac{1 + \varepsilon}{1 - 1} = \frac{\varepsilon}{-1} = -\varepsilon$$

$$x^2 = +\infty \rightarrow \frac{1 + \varepsilon}{(+\infty)} = 0 \quad \checkmark$$

$$x^2 = 0$$

$$R = \mathbb{R} \setminus (-\varepsilon, \varepsilon)$$

$$x = \pm 1 \rightarrow x^2 - 1 = 0 \rightarrow \text{خرج صفر} \rightarrow R = \mathbb{R} \setminus (-\varepsilon, \varepsilon)$$

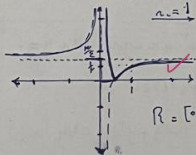
$$\frac{y \sinh x + \varepsilon}{\sinh x - 1} = \frac{y \square + \varepsilon}{\square - 1} \xrightarrow{\sinh x = -1} \frac{-1 + \varepsilon}{-1 - 1} = \frac{\varepsilon}{-2} = -\frac{\varepsilon}{2}$$

$$\sinh x = 1 \rightarrow \frac{y + \varepsilon}{1 - 1} = \frac{\varepsilon}{-2} = -\frac{\varepsilon}{2}$$

$$-1 \leq \sinh x \leq 1$$

$$\sinh x = 1 \rightarrow \text{خرج} = 0 \Rightarrow \text{خرج صفر} \Rightarrow R = [-\frac{\varepsilon}{2}, \frac{\varepsilon}{2}]$$

$$\text{الف) } \frac{y}{x} = \frac{1}{x} \quad \text{خارج صفر} = 0 \Rightarrow \text{خرج صفر} \Rightarrow R = [0, +\infty)$$

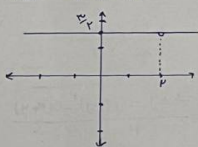


$$y = \sqrt{\frac{9x-1}{-1+\varepsilon x}} = \sqrt{\frac{9x-1}{\varepsilon x-1}}$$

$$9x-1 = \varepsilon x-1$$

$$y = \frac{1}{\varepsilon} \sqrt{\frac{(x-1)}{(x-1)}}$$

$$R = \left\{ \frac{1}{\varepsilon} \right\}$$

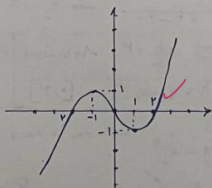


$$y = x|x| - 1$$

$$R = \mathbb{R}$$

$$x \geq 0 \rightarrow x^2 - 1$$

$$x \leq 0 \rightarrow -x^2 - 1$$

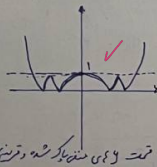
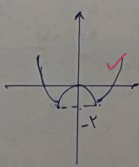
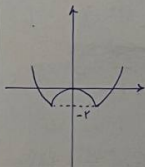


$$f(x)$$

$$f(|x|)$$

$$f(|x|) + 1$$

$$|f(|x|) + 1|$$



فقط برای مقادیر مثبت و منفی

۱- بجای n ، $-n$ قرار می دهیم و یک دستگاه می سازیم:

$$\begin{aligned} f(-n) - n^r f(n) &= 2|n| + 1 \xrightarrow{\times n} \begin{cases} n^r f(-n) - n^{r+1} f(n) = 2n|n| + n & (I) \\ f(n) + n^r f(-n) = 2|n| + 1 & (II) \end{cases} \\ f(n) + n^r f(-n) &= 2|n| + 1 \end{aligned}$$

$$\underline{II - I} \rightarrow (1 + n^r) f(n) = 2(1 - n)|n| + 1 - n \Rightarrow f(n) = \frac{(1 - n)(2|n| + 1)}{1 + n^r}$$