

نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره ۵۵ ... کلاس ... اینهمه ...

۱۹ ژوئن

این) $\frac{n-1}{n} - \frac{n}{n-1} \geq 0 \rightarrow \frac{(n-1)^2 - n^2}{n(n-1)} \geq 0 \rightarrow \frac{(n-1-n)(n-1+n)}{n(n-1)} \geq 0 \rightarrow \frac{1-2n}{n(n-1)} \geq 0$
 $\Rightarrow \frac{1}{+} \frac{-}{+} \frac{1}{+} \frac{1}{+} \rightarrow D = (-\infty, 0) \cup [\frac{1}{2}, +\infty)$

ب) $\begin{cases} n+1 \neq 0 \rightarrow n \neq -1 \\ n \neq 0 \\ n-1 \neq 0 \rightarrow n \neq 1 \\ n+2 \neq 0 \rightarrow n \neq -2 \end{cases} \rightarrow \frac{3n^2+6n-1}{(n-1)(n+2)} \neq 0 \rightarrow 3n^2+6n-1 \neq 0 \rightarrow n \neq \frac{-6 \pm \sqrt{36+12}}{6} \Rightarrow D = \mathbb{R} - \{-1, 0, \pm 1, -\frac{5}{3}\}$

این) $(x^{n-1} - x^2)(x^5 - x^{n+2}) \geq 0 \rightarrow \frac{-2}{+} \frac{5}{-} \frac{2}{+} \rightarrow D = (-\infty, -2] \cup [2, +\infty)$

* ب) $\begin{cases} x-1 \geq 0 \rightarrow x \geq 1 \\ y+1 \geq 0 \rightarrow y \geq -1 \end{cases} \rightarrow \sqrt{y+1} = 3 - \sqrt{x-1} \rightarrow \sqrt{x-1} \leq 3 \rightarrow x-1 \leq 9 \rightarrow x \leq 10$
 باید همواره مثبت باشد!
 $D \neq \emptyset, [1, 10]$

① $x^2 - x - 2 \geq 0 \rightarrow (x+1)(x-2) \geq 0 \rightarrow \frac{-1}{+} \frac{2}{-} \frac{2}{+} \rightarrow (-\infty, -1] \cup (2, +\infty)$

② $x^2 - 1 \geq 0 \rightarrow x^2 \geq 1 \rightarrow \begin{cases} x \geq 1 \\ x \leq -1 \end{cases} \rightarrow (-\infty, -1] \cup [1, +\infty)$

③ $\sqrt{x^2 - 1} + 1 \neq 0 \rightarrow \sqrt{x^2 - 1} \neq -1 \rightarrow \text{دواره برقرار}$

① $\cap$ ② $\cap$ ③ = $(-\infty, -1] \cup (2, +\infty)$

④ $-x^2 + ax + 3 \geq 0 \xrightarrow{a=-2} -x^2 - 2x + 3 \geq 0 \rightarrow -1 - 2a \geq 0 \rightarrow 2a \leq -1 \rightarrow a \leq -\frac{1}{2}$

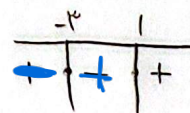
$-x^2 - \frac{1}{2}x + 3 \geq 0 \rightarrow x = \frac{\frac{1}{2} \pm \sqrt{\frac{1}{4} + 12}}{-2} \rightarrow x = -2, \frac{3}{2} \rightarrow \frac{-2}{-} \frac{3}{+} \frac{3}{-}$

$D = [-2, \frac{3}{2}] \rightarrow b = \frac{3}{2}$

$a+b = -\frac{1}{2} + \frac{3}{2} = 1$

* $f(n) - n \geq 0$ نشان دهنده $\begin{cases} 2n - 2 = n \rightarrow 2n = 2 \rightarrow n = 1 \\ 2n + 3 = n \rightarrow n = -3 \end{cases}$

$n+3 \geq 0 \rightarrow n \geq -3$



چون ۲ ضابطه ای است به درستی جاری نمیگردد پس علامت کن!

$D_f = [-3, +\infty)$

$$f\left(\frac{\sqrt{x}}{y} + \frac{x}{y}\right) = f\left(\frac{x + \sqrt{x}}{y}\right) = x \times \frac{x + \sqrt{x}}{x} \left(\frac{\sqrt{x}}{x} + 1 - x\right) = \left(\frac{x + \sqrt{x}}{x}\right) \frac{\sqrt{x} - x}{x}$$

$$f(n) = 2n(n-2)$$

$$\rightarrow = \frac{x-x}{x} = \left(-\frac{1}{x}\right) \quad \text{D}$$

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★ $f(f(a)) = a$ برعکس است

$$f\left(\frac{a+1}{a-1}\right) = \frac{\frac{a+1}{a-1} + 1}{\frac{a+1}{a-1} - 1} = \frac{\frac{a+1+a-x}{a-1}}{\frac{x+1-x+1}{a-1}} = \frac{\frac{2a}{a-1}}{\frac{2}{a-1}} = \frac{2a}{2} = a \rightarrow \text{پس در برعکس است. اگر } a=1 \text{ خارج دامنه است.}$$

D ✓ $\mathbb{R} - \{1\}$

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★ $f(\sqrt{a^2-1}) = (\sqrt{a^2-1})^2 - x(\sqrt{a^2-1}) = a^2-1 - x\sqrt{a^2-1} = -x$

$$a^2-1 - x\sqrt{a^2-1} + x = 0 \rightarrow (\sqrt{a^2-1} - x)^2 = 0 \rightarrow \sqrt{a^2-1} = x \rightarrow a^2-1 = x^2$$

D ✓ $a^2 = x^2 + 1$
 $a = \pm \sqrt{x^2 + 1}$

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$$f(n+x) = (n-x)(n-x)$$

$$f(x) \rightarrow n+x = x \rightarrow n=1 \rightarrow f(x) = \left(1-\frac{1}{x}\right)\left(1-\frac{1}{x}\right) = x$$

$$f(-x) \rightarrow n+x = -x \rightarrow n = -x \rightarrow f(-x) = \left(-\frac{1}{x}-x\right)\left(-\frac{1}{x}-x\right) = vx$$

$$f(-x) \times f(x) = vx \times x = vx^2 \quad \text{D}$$

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$$x \cos^2 m + \sin^2 m = x, \Delta \rightarrow x \cos^2 m + \sin^2 m - x, \Delta = 0 \rightarrow 1 \cos^2 m + 1 \sin^2 m - x = 0$$

$$\Delta = 3x \Rightarrow t = \frac{-1 \pm 1}{2} \rightarrow t = \frac{1}{2}, \frac{-1}{2} \Rightarrow \cos m = \frac{1}{2}$$

(مقدارهای مجاز)

$$1 + \tan^2 m = \frac{1}{\cos^2 m} \rightarrow \frac{1}{\cos^2 m} = x \rightarrow 1 + \tan^2 m = x \rightarrow \tan^2 m = (x-1) = f(x, \Delta)$$

D

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ب-۲) $\sqrt{x-1} + \sqrt{y+1} = 3$ و $\sqrt{y+1} = 3 - \sqrt{x-1} \rightarrow 3 - \sqrt{x-1} \geq 0 \rightarrow \sqrt{x-1} \leq 3 \rightarrow x \leq 10$ I

$\downarrow$
 $x-1 \geq 0 \rightarrow x \geq 1$ I

I, II $\rightarrow 1 \leq x \leq 10 \rightarrow D_f = [1, 10]$

$f(x) - x = \begin{cases} 3x - 2 - x & x \geq 1 \\ 2x + 3 - x & x < 1 \end{cases} = \begin{cases} 2x - 2 & x \geq 1 \\ x + 3 & x < 1 \end{cases}$ ۵-

$f(x) - x \geq 0 \rightarrow \begin{cases} 2x - 2 \geq 0 \rightarrow x \geq 1 \checkmark \\ x + 3 \geq 0 \xrightarrow{x < 1} -3 \leq x < 1 \checkmark \end{cases}$

$\rightarrow D_f = [-3, +\infty)$

باید به پس نیز مشخص است!

