

۱۲/۲۵

نام و نام خانوادگی محمد مهدی داری پاسخنامه تشریحی تکلیف شماره ۱۵۸ کلاس ... دبیر ...

$$\text{الف)} \quad \frac{x-1}{x} - \frac{x}{x-1} \geq 0 \Rightarrow \frac{(x-1)^2 - x^2}{x(x-1)} \geq 0 \Rightarrow \frac{(x-1)(-1)}{x(x-1)} \geq 0$$

$$\text{ب)} \quad \mathbb{R} - \left\{ -\frac{1}{2}, -\frac{1}{3}, \frac{1}{4}, \frac{1}{5} \right\}$$

$$(-\infty, 0) \cup \left[\frac{1}{4}, 1 \right) \cup \left(+\frac{1}{5}, 0 \right) \cup \left(+\frac{1}{3}, 0 \right) \cup \left(+\frac{1}{2}, 0 \right)$$

$$\frac{1}{x+1} - \frac{1}{x+2} \geq 0 \Rightarrow \frac{x+2}{(x+1)(x+2)} - \frac{x+1}{(x+1)(x+2)} \geq 0 \Rightarrow \frac{1}{(x+1)(x+2)} \geq 0$$

$$\text{الف)} \quad \left(\frac{1}{x} - 9 \right) (x^2 - 3x^2) \geq 0 \Rightarrow \left(\frac{1}{x} - 9 \right) (-2x^2) \geq 0 \Rightarrow \left(\frac{1}{x} - 9 \right) \leq 0$$

باید دامنه بست
بیاری
این برد
است!

$$\frac{1}{x} - 9 \geq 0 \Rightarrow x \geq 1$$

$$\frac{1}{x} - 9 \leq 0 \Rightarrow x \leq -1$$

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$$x^2 - 2x - 2 > 0 \Rightarrow (x+1)(x-2) > 0$$

$$x^2 - 1 \geq 0 \Rightarrow (x+1)(x-1) \geq 0$$

$$\sqrt{x^2-1} + 1 \neq 0$$

$$\frac{-2}{-} \quad \frac{b}{+} \quad \frac{-}{-}$$

$$\frac{-a - \sqrt{a^2 + 12}}{-2} = -\frac{1}{2} \Rightarrow a = -\frac{1}{2} - \sqrt{\frac{1}{4} + 12}$$

$$f(x) - x \geq 0 \Rightarrow f(x) \geq x \Rightarrow x \geq -3$$

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$$\sin \frac{\pi}{4} + \cos \frac{\pi}{4} \rightarrow \frac{\sqrt{2}}{2} + 1$$

$$r \left(\frac{\sqrt{2}}{2} + 1 \right)^2 - r \left(\frac{\sqrt{2}}{2} + 1 \right) = \frac{2}{2} - r = -\frac{1}{2}$$

2

8

$$f(a) = \frac{a+1}{a-1}$$

$$f\left(\frac{a+1}{a-1}\right) = a \rightarrow \frac{a+1}{a-1} = a \rightarrow a^2 - 1a = a+1$$

$$f(f(a)) = a$$

$$f\left(\frac{a+1}{a-1}\right) = a \quad \times$$

$$a^2 - 1a - 1 = 0$$

$$a = \frac{1 \pm \sqrt{5}}{2}$$

1, 2

7

$$x^2 - 1x = -1 \rightarrow (x-1)^2 = 0 \rightarrow x = 1$$

$$g(a) = 1 \rightarrow \sqrt{a^2 - 1} = 1$$

$$a^2 - 1 = 1$$

$$a = \pm \sqrt{2}$$

$$! \text{ دقت } a^2 = 2 \rightarrow a = \pm \sqrt{2}$$

1, 2

4

$$f(x) = 1 - 2 + 4 = 1$$

$$\rightarrow 1 \times \sqrt{1} = 1$$

$$f(-1) = 1 + 1 + 4 = 6$$

$$a = 6$$

2

9

$$r \cos^2 x + 1 \cos x = \frac{1}{2} \rightarrow \cos x = \frac{1/2}{r \cos^2 x + 1}$$

$$\frac{\sin^2 x}{\cos^2 x} = 1 - \left(\frac{1/2}{r \cos^2 x + 1} \right)^2$$

0

10

(۲-الف) $((\frac{1}{x})^n - 4)(3x - x^n) \geq 0 \rightarrow \frac{-2}{+0-0+} \rightarrow Df = (-\infty, -2] \cup [\frac{5}{2}, +\infty)$

$(\frac{1}{x})^n = 4 \rightarrow x = -2$ $3x = x^n \rightarrow x = \frac{5}{2}$

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

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

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

$-2a - 1 = 0$

(۲-ج) $3 - 2(a) - (-2)^2 = 0 \rightarrow a = -\frac{1}{2}$ $\rightarrow$ باید ریشه‌های عبارت زیر را پیدا کنیم

$f(x) = \sqrt{3 - \frac{x}{2} - x^2} \rightarrow -x^2 - \frac{x}{2} + \frac{3}{2} = 0 \rightarrow x = (\frac{1}{2} \pm \sqrt{\frac{1}{4} + 12}) \times -\frac{1}{2}$ $\rightarrow x = -2$
 $\rightarrow x = \frac{3}{2} \rightarrow b = \frac{3}{2}$

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

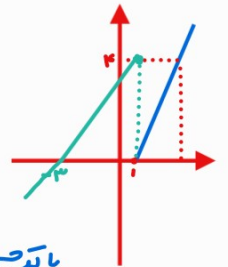
$f(x) - x = \begin{cases} 3x - 2 - x & x \geq 1 \\ x + 3 - x & x < 1 \end{cases} = \begin{cases} 2x - 2 & x \geq 1 \\ x + 3 & x < 1 \end{cases}$

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

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

باید به پس نیز مشخص است!



$f(f(a)) = \frac{f(a)+1}{f(a)-1} = a \rightarrow \frac{\frac{a+1}{a-1} + 1}{\frac{a+1}{a-1} - 1} = \frac{\frac{a+1+a-1}{a-1}}{\frac{a+1-a+1}{a-1}} = \frac{2a}{2} = a$

-و

$x \in Df \rightarrow x \in \mathbb{R} - \{1\}$

پس به ازای تمامی نقاط در دامنه f بهتر است $\checkmark$

$$f(\star) = -\varepsilon \rightarrow \star^r - r\star = -\varepsilon \rightarrow (\star - r)^r = 0 \rightarrow \star = r \checkmark$$

$$g(a) = r \rightarrow \sqrt{a^r - 1} = r \rightarrow a^r - 1 = \varepsilon \rightarrow a^r = \Delta \rightarrow a = \pm \sqrt[r]{\Delta}$$

$$f(r \cdot s_n + \Delta \cdot s_n) = f(r, \Delta) \rightarrow r \cdot s_n + \Delta \cdot s_n = \psi, \Delta \rightarrow r \cdot s_n + \Delta \cdot s_n - \frac{\psi}{r} = 0 \quad -1 \checkmark$$

$$C \cdot s_n = \frac{-\Delta \pm \sqrt{\Delta^2 + 4r\Delta}}{2} \rightarrow C \cdot s_n = \frac{-\Delta + 4}{2} = \frac{1}{r}$$

$$\hookrightarrow C \cdot s_n = \frac{-\Delta - 4}{2} = -\frac{\psi}{\varepsilon} \times C \cdot s_n = -$$

$$\text{result: } C \cdot s_n = \frac{1}{r}, \quad C \cdot s_n = \frac{1}{r} \rightarrow f(r, \Delta) = r$$

$$\downarrow \quad \downarrow$$

$$\text{banh} = (\sqrt{r})^r = r \quad \text{banh} = (-\sqrt{r})^r = r$$