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

الف) $x \neq 0 \Rightarrow \frac{x-1}{x} - \frac{x}{x-1} = \frac{(x-1)^2 - x^2}{x(x-1)} = \frac{1-2x}{x(x-1)} \Rightarrow 1-2x \neq 0 \Rightarrow x \neq \frac{1}{2}$
 $x = \frac{1}{2} \Rightarrow \frac{1}{2} - \frac{2}{1} = -\frac{3}{2} \Rightarrow (-\infty, 0) \cup [\frac{1}{2}, 1) = D_f$ ✓

ب) $x+1 \neq 0 \Rightarrow x \neq -1$, $x \neq 0$, $x+2 \neq 0 \Rightarrow x \neq -2$, $x-1 \neq 0 \Rightarrow x \neq 1$
 $\frac{3}{x-1} + \frac{1}{x+2} = 0 \Rightarrow 3(x+2) = -(x-1) \Rightarrow x = -\frac{5}{4}$
 $\Rightarrow D_f = R - \{-2, -\frac{5}{4}, -1, 1\}$ ✓

الف) $(\frac{1}{x})^x - 9 \geq 0 \Rightarrow \frac{1}{x^x} - 9 \geq 0 \Rightarrow \frac{1}{x^x} \geq 9 \Rightarrow x^x \leq \frac{1}{9}$
 $x^x \leq \frac{1}{9} \Rightarrow x^x \leq \frac{1}{3^2} \Rightarrow x^x \leq 3^{-2} \Rightarrow x \leq 2, 5$
 $D_f = (-\infty, -2] \cup [2, 5, +\infty)$ ✓

ب) $x-1 \geq 0 \Rightarrow x \geq 1$ و $\sqrt{y+1} = 3 - \sqrt{x-1}$ پس $\sqrt{y+1} \leq 3$
 $3 - \sqrt{x-1} \geq 0 \Rightarrow \sqrt{x-1} \leq 3 \Rightarrow x-1 \leq 9 \Rightarrow x \leq 10$
 $\Rightarrow D_f = \{x \mid x \in [1, 10]\}$ ✓

$x^2 - x - 2 > 0 \Rightarrow (x+1)(x-2) > 0 \Rightarrow x \neq -1$ و $x \neq 2$
 $x^2 - 1 \geq 0 \Rightarrow (x+1)(x-1) \geq 0 \Rightarrow x \neq -1$ و $x \neq 1$
 $\Rightarrow D_f = R - \{-1, 1, 2\}$ ✓

ج) $\sqrt{x^2-1} + 1 = \dots$
 $\Rightarrow D_f = R - [-1, 2]$ ✓

چون بازه را داریم و باید عبارت از کسر مساوی باشد بنابراین $\frac{3}{4} = \frac{a}{b}$
 $3-2a-4=0 \Rightarrow 2a=-1 \Rightarrow a=-\frac{1}{2}$
 $-x^2 - \frac{1}{4}x + 3 \Rightarrow (x+2)(-x+\frac{3}{4}) \Rightarrow b=\frac{3}{4}$
 $a+b = \frac{3}{4} - \frac{1}{2} = \frac{1}{4}$ ✓

$x \geq 1 \Rightarrow 2x-2-x \geq 0 \Rightarrow x-2 \geq 0 \Rightarrow x \geq 2$
 $x < 1 \Rightarrow 2x+3-x \geq 0 \Rightarrow x+3 \geq 0 \Rightarrow x \geq -3$
 $\Rightarrow D_f = [-3, +\infty)$ ✓

الف) $D_f = [-3, +\infty)$ ✓

$$x=0 \rightarrow (a+1)(a+r) = Va + V \xrightarrow{x=-r} Va - r \Rightarrow r(Va + V) = Va - r + a$$

$$11a + r = Va - r \Rightarrow 10a = -11 \Rightarrow a = -1,1$$

(فقط!)

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$$\sqrt{r-\sqrt{r}} + \frac{1}{\sqrt{r+\sqrt{r}}} + \sqrt{r+\sqrt{r}} + \frac{1}{\sqrt{r-\sqrt{r}}} + r \rightarrow \frac{\sqrt{r-\sqrt{r}} + 1}{\sqrt{r+\sqrt{r}}}$$

$$+ \frac{\sqrt{r-\sqrt{r}} + 1}{\sqrt{r-\sqrt{r}}} + r \rightarrow \frac{r(\sqrt{r-\sqrt{r}} + \sqrt{r+\sqrt{r}})}{\sqrt{r-\sqrt{r}}} + r \Rightarrow r(\sqrt{r-\sqrt{r}} + \sqrt{r+\sqrt{r}} + r)$$

$$t^r, r-\sqrt{r} + r+\sqrt{r} + r\sqrt{r-\sqrt{r}} = 9 \Rightarrow t = \sqrt{9} = 3 \text{ ا.ب.ج.} = r\sqrt{9} + r$$

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$$x \rightarrow \begin{cases} r f(x) - r f(-x) = rx^r - x \xrightarrow{x^r} r f(x) - 4 f(-x) = 11x^r - rx \\ -2 \rightarrow \begin{cases} r f(-x) - r f(x) = rx^r + x \xrightarrow{x^r} 4 f(-x) - 4 f(x) = 11x^r + rx \end{cases} \end{cases}$$

$$\Rightarrow -\omega f(x) = r \cdot x^r + x \Rightarrow f(x) = -rx^r - \frac{x}{\omega}$$

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$$x=0 \Rightarrow r f(0) = rm - 1 \xrightarrow{x=-1} 4 f(0) = 14 + rm + rm + (-1) = 2m + 15$$

$$\Rightarrow 4m - 1 = 2m + 15 \Rightarrow 2m = 16 \Rightarrow m = \frac{16}{2}$$

$$f(0) = \frac{r(\frac{16}{r}) - 1}{r} = \frac{16}{r} = 4, 16$$

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$$x=-1 \rightarrow \frac{r(-1)^r - 11(-1) + r}{-1} = f(-1) + f(\frac{1}{r}) \Rightarrow r f(-1) = -11$$

$$f(-1) = -9$$

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