

نام و نام خانوادگی پریسا جهانمیر پاسخنامه تشریحی تکلیف شماره ۴۰۰۰ کلاس ... پنجم ... دوره A

الف) $\frac{x-1}{x} - \frac{x}{x-1} \geq 0 \rightarrow \frac{(x-1)^2 - x^2}{x(x-1)} \geq 0$

$x^2 - 2x + 1 - x^2 = -2x + 1 \rightarrow x \leq \frac{1}{2}$

$x \neq 0, x \neq 1$

$\frac{x}{x-1} \geq 0 \rightarrow D_f = (-\infty, 0) \cup [\frac{1}{2}, 1)$

$$\therefore \frac{(x) - r(x+1)}{(x+1)(x)} = \frac{x - rx - r}{(x)(x+1)} = \frac{x - rx - r}{x^2 + x + x - 1} \quad \text{① } (x)(x+1) \neq 0 \rightarrow x \neq 0, x \neq -1$$

$$\frac{r(x+r) + 1(x-1)}{(x-1)(x+r)} = \frac{rx + r^2 + x - 1}{(x-1)(x+r)} \quad \text{② } rx + \Delta \neq 0 \rightarrow x \neq \frac{-\Delta}{r} \quad D_f \subseteq \mathbb{R} - \left\{ -r, -1, 0, 1, \frac{-\Delta}{r} \right\}$$

$$\quad \text{③ } (x-1)(x+r) \neq 0 \rightarrow x \neq 1, x \neq -r$$

الف) $\left(\left(\frac{1}{r}\right)^n - 9\right) (r^2 - r^n) \geq 0 \Rightarrow \underbrace{\left(\frac{1}{r^n} - r^2\right)}_{\frac{1}{r^n} \leq r^2 \rightarrow n \geq \frac{0}{r}} \underbrace{(r^2 - r^n)}_{r^2 \leq r^n \rightarrow n \leq \frac{0}{r}} \geq 0$

$\frac{n}{+} \quad \frac{-r}{0} \quad \frac{\Delta}{-r} \quad \frac{+}{+}$

$Df \leq (-\infty, -r] \cup \left[\frac{0}{r}, +\infty\right)$

$\therefore \sqrt{x-1} + \sqrt{y+1} \leq \sqrt{2} \rightarrow \sqrt{y+1} \leq \sqrt{2} - \sqrt{x-1}$
 $\begin{cases} \textcircled{1} x-1 \geq 0 \rightarrow x \geq 1 & \Rightarrow \textcircled{1} \cap \textcircled{2} \Rightarrow D_f = [1, \sqrt{2}] \\ \textcircled{2} \sqrt{2} - \sqrt{x-1} \geq 0 \rightarrow \sqrt{2} \geq \sqrt{x-1} \rightarrow x-1 \leq 1 \rightarrow x \leq \sqrt{2} \end{cases}$

$$\left\{ \begin{array}{l} \textcircled{1} x^2 - x - 2 > 0 \rightarrow (x-2)(x+1) > 0 \rightarrow \frac{-1}{+} \frac{2}{-} \rightarrow (-\infty, -1) \cup (2, +\infty) \\ \textcircled{2} x^2 \geq 0 \rightarrow x^2 \geq 1 \rightarrow x \geq 1 \vee x \leq -1 \rightarrow (-\infty, -1] \cup [1, +\infty) \\ \textcircled{3} \sqrt{x^2 + 1} \neq 0 \rightarrow \sqrt{x^2 - 1} \neq -1 \rightarrow \mathbb{R} \text{ تمام } \\ \text{اعداد است} \end{array} \right.$$

$$D_f \subseteq (-\infty, -1) \cup (1, +\infty)$$

$$\begin{aligned} r + ax - x^r &\geq 0 \rightarrow (x+r)(x-b) \leq r + ax - x^r \\ \text{بسیار است } b = r &\Rightarrow -(x^r + (b+r)x - rb) \leq -x^r + ax + r \\ -x^r + (b-r)x + rb &\leq -x^r + ax + r \\ b-r &\leq a \quad rb \leq r \rightarrow \boxed{b \leq \frac{r}{r}} \\ \frac{r}{r} - r &\leq -\frac{1}{r} \leq a \end{aligned}$$

$f(x) \leq x$
 $x \leq -10$
 $f(x) = -17$
 $y \leq x \rightarrow y \leq -10$
 $-17 \leq (-10) \rightarrow 0$
 $x > -10$
 $x < 1$
 $f(x) \leq x$
 $y \leq x \rightarrow y \leq 1$
 $x - 0 > 0$

$$\begin{aligned} f(0) &= v(a+1) \\ f(x) &= ra - c \end{aligned} \rightarrow \begin{aligned} rf(0) &= f(-r) + a \\ r(v(a+1)) &= ra - c + a \\ 1(a+1)c &= ra - c \\ 10a &= -1n \rightarrow a = -1/11 \end{aligned}$$

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$$\begin{aligned} rf(n) - cf(-n) &= en^r - n \xrightarrow{x^r} cf(n) - cf(-n) = 11n^r - 2n \\ rf(-n) - rf(n) &= en^r + n \xrightarrow{x^r} cf(-n) - cf(n) = 11n^r + 2n \\ -\Delta f(n) &= 10n^r + n \\ f(n) &= -en^r - \frac{1}{10}n \end{aligned}$$

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$$\begin{aligned} n+r &\leq 0 \rightarrow n \leq -r \rightarrow (-r+r)f(-r) - r(-r)f(-r+r) = c(-r)^r - m(-r) + r^{m-1} \\ cf(0) &= 19 + 5m + 5m - 1 = 4m + 10 \end{aligned}$$

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$$\begin{aligned} n &\leq 0 \rightarrow (0+r)f(0) - r(0)f(0+r) = c(0)^r - m(0) + r^{m-1} \\ rf(0) &= r^m \frac{1}{r^r} - 1 = \left(\frac{r0}{r}\right) \\ cf(0) &\leq r^{m-1} \xrightarrow{x^r} cf(0) \leq 9m - r \\ 4m + 10 &\leq 9m - r \\ 5m &\geq 10 \rightarrow m \geq \frac{10}{5} = 2 \end{aligned}$$

$$ax + b + \frac{a(\frac{1}{n}) + b}{\frac{a}{n}} = \frac{en^r - 11n + r}{n}$$

$$\begin{aligned} f(n) &\leq ax + b = \frac{1}{2}x^r \\ f(n) &= en - 9 \end{aligned}$$

$$\frac{an^r + bx + a}{n} = \frac{en^r - 11n + r}{n} \rightarrow a = r, rb = -11 \rightarrow b = -9$$

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

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