

نام و نام خانوادگی آریلیا سارا پاسخنامه تشریحی تکلیف شماره ۱ کلاس ... (دوازدهم) ... A

$$x \cos y = y \cos x \xrightarrow{x=\frac{\pi}{2}} \frac{\pi}{2} \cos y = y \cos \frac{\pi}{2} \Rightarrow y = \frac{\pi}{2}$$

$$\frac{x}{2} \cos y = 0 \Rightarrow y = K\pi + \frac{\pi}{2} \quad \text{تابع نیست}$$

(الف)

$$\begin{cases} y_1'' = 2x^2 + 2x - 1 \\ y_2'' = 2x^2 + 2x - 1 \end{cases} \Rightarrow y_1' = y_2' \Rightarrow y_1 = y_2$$

تابع هست

$$x y^2 + 2x = y^3 - 2y \Rightarrow x(y^2 + 2) - y(y^2 + 2) = 0$$

$$\Rightarrow (y^2 + 2)(x - y) = 0 \Rightarrow y^2 + 2 \neq 0 \Rightarrow x - y = 0 \Rightarrow x = y$$

تابع هست

(ج)

$$\frac{x+y}{2} = \sqrt{xy} \Rightarrow x+y = 2\sqrt{xy} \Rightarrow x^2 + y^2 + 2xy = 4xy \Rightarrow x^2 + y^2 - 2xy = 0 \Rightarrow (x-y)^2 = 0 \Rightarrow x-y=0 \Rightarrow x=y$$

تابع هست

$$f(x) = \begin{cases} 2x^2 - b & |x-1| \geq 2 \\ a + 2x & -2 \leq x-1 \end{cases}$$

$$|x-1| \geq 2 \Rightarrow \begin{cases} x-1 \geq 2 \Rightarrow x \geq 3 \\ x-1 \leq -2 \Rightarrow x \leq -1 \end{cases}$$

$$\begin{cases} 2x^2 - b & x \leq -1 \\ a + 2x & x \geq -1 \end{cases} \Rightarrow 2(-1)^2 - b = a + 2(-1) \Rightarrow 2 - b = a - 2 \Rightarrow a + b = 4$$

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

$$-x^2 - bx + a \geq 0 \Rightarrow x^2 + bx - a \leq 0 \quad S = -\frac{b}{1} = -b$$

$$S = a + b = -b \Rightarrow a = -2b \quad / \quad P = a \times b = \frac{-a}{1} = -a \Rightarrow b = 1$$

$$a = -2b = -2(-1) = 2$$

$$a + b = 2 + (-1) = 1$$

$$y = \frac{r}{\sqrt{ax^2 + bx + c}}$$

$$a(r)^2 + b(r) + c = 0 \Rightarrow ra + rb + c = 0$$

$$x=r \text{ ریشه منبسط است} \Rightarrow a(x-r)^2 = a(x^2 - 2rx + r^2) = ax^2 - 2arx + ar^2$$

$$ra + c - r|b| = ra + ra - r|-ra| = 2ra - r^2a = -\Delta a$$

$$b = -ra \Rightarrow a = -\frac{b}{r}$$

$$-\Delta a = -\Delta \left(-\frac{b}{r}\right) = \frac{\Delta}{r} b$$

$$f(x) = \sqrt{x} + \sqrt{y} = 9 \Rightarrow \sqrt{y} = 9 - \sqrt{x} \Rightarrow$$

(الف)

$$f(x) = \sqrt{\frac{1}{|x| - [x]}}$$

$$|x| - [x] \neq 0 \Rightarrow$$

$$D_f = \mathbb{R} - \mathbb{W}$$

① $x \geq 0, y \geq 0 \Rightarrow 9 - \sqrt{x} \geq 0 \Rightarrow 9 \geq \sqrt{x} \Rightarrow$

$$81 \geq x \Rightarrow \textcircled{II} \quad x \leq 81$$

$$\textcircled{I} \cap \textcircled{II} \Rightarrow [0, 81]$$

$$f(x) = \log \frac{1}{9 + \sqrt{|x|} - |x|}$$

($\Rightarrow$)

$$f(x) = \sqrt{\log \frac{1}{9 + \sqrt{|x|} - |x|}} \quad \text{I} \quad 9 + \sqrt{|x|} - |x| > 0 \Rightarrow x > \frac{1}{4}$$

$$\text{II} \quad x > 0, x \neq 1$$

$$\text{III} \quad \log \frac{1}{9 + \sqrt{|x|} - |x|} > 0 \Rightarrow 9 + \sqrt{|x|} - |x| > 1 \Rightarrow \sqrt{|x|} \geq 1 \Rightarrow |x| \geq 1 \Rightarrow x \geq \frac{1}{4}$$

$$\text{I} \cap \text{II} \cap \text{III} \Rightarrow D_f = \left(\frac{1}{4}, \frac{1}{4} \right] \cup (1, +\infty)$$

$$9 + \sqrt{|x|} - |x| > 0 \Rightarrow -t^2 + t + 9 > 0 \Rightarrow t^2 - t - 9 < 0 \Rightarrow$$

$$(t-3)(t+6) < 0 \Rightarrow \frac{-3}{+1} < t < \frac{6}{-1} \Rightarrow \begin{cases} t = \sqrt{|x|} = 3 & \text{OB} \\ t = \sqrt{|x|} = -6 & \text{OB} \end{cases}$$

$$\sqrt{|x|} = 3 \Rightarrow x = \pm 9 \quad \frac{-9}{+1} < t < \frac{6}{-1} \quad D_f = (-9, 9)$$

$$y = \sqrt{\frac{rx+r}{x+b}} + a$$

$$x+b \neq 0 \Rightarrow x \neq -b \Rightarrow b = -r$$

Y

$$y = \sqrt{f(x) - x + 1}$$

$$f(x) = \begin{cases} rx-1 & [x] > r \\ rx+r & [x] \leq r \end{cases} \Rightarrow \begin{cases} rx-1 & x \geq \Delta \\ rx+r & x < \Delta \end{cases}$$

$$\text{I} \quad x \geq \Delta \Rightarrow y = \sqrt{rx-1-x+1} = \sqrt{rx} \Rightarrow x \geq \Delta$$

$$\text{II} \quad x < \Delta \Rightarrow y = \sqrt{rx+r-x+1} = \sqrt{rx+r} \Rightarrow rx+r \geq 0 \Rightarrow x \geq -\frac{r}{r} \Rightarrow -\frac{r}{r} \leq x < \Delta$$

$$\text{I} \cap \text{II} \Rightarrow D_y = \left[-\frac{r}{r}, +\infty \right)$$

A

$$y = \frac{rx^r + rx^{r+1} + 1}{(rx^r + rx^{r+1})^r} = \frac{r(rx+1)^r}{(rx+1)^r} + \frac{r}{rx+1}$$

$$rx+1 \neq 0 \Rightarrow rx \neq -1 \Rightarrow$$

$$x \neq -\frac{1}{r}$$

$$D_y = \mathbb{R} - \left\{ -\frac{1}{r} \right\}$$

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$$y = \sqrt{1 - \log(rx-a)} \quad \text{I} \quad rx-a > 0 \Rightarrow rx > a \Rightarrow x > \frac{a}{r}$$

$$\text{II} \quad 1 - \log(rx-a) \geq 0 \Rightarrow 1 \geq \log(rx-a) \Rightarrow 10 \geq rx-a \Rightarrow \frac{10+a}{r} \geq x \Rightarrow \Delta + \frac{a}{r} \geq x$$

$$\text{I} \cap \text{II} \Rightarrow \frac{a}{r} < x \leq \Delta + \frac{a}{r} \Rightarrow D_y = \left(\frac{a}{r}, \Delta + \frac{a}{r} \right]$$

$$c-b = \Delta + \frac{a}{r} - \frac{a}{r} = \Delta$$