

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره ۱۰۰۰ کلاس: ریاضی تجربی B

الف) $y^3 - 2x^2 = 2x - 1 \Rightarrow y^3 = 2x^2 - 2x + 1 \Rightarrow y = \sqrt[3]{2x^2 - 2x + 1} \xrightarrow{x_1 = x_2} \sqrt[3]{2x_1^2 - 2x_1 + 1} = \sqrt[3]{2x_2^2 - 2x_2 + 1}$

$\Rightarrow 2x_1^2 - 2x_1 + 1 = 2x_2^2 - 2x_2 + 1 \Rightarrow y_1 = y_2$ تابع است ✓

ب) $x \cos y = y \cos x \Rightarrow$ عندی جفت $\Rightarrow x = \frac{\pi}{2} \Rightarrow \frac{\pi}{2} \cos y = 0 \Rightarrow \cos y = 0 \Rightarrow y = \frac{\pi}{2} \times$ تابع نیست $\frac{\pi}{2}$

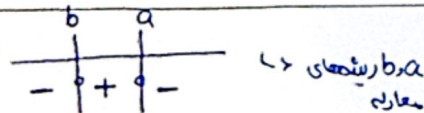
ج) $\frac{x+y}{2} = \sqrt{xy} \Rightarrow x+y = 2\sqrt{xy} \Rightarrow (\sqrt{x} - \sqrt{y})^2 = 0 \Rightarrow \sqrt{x} = \sqrt{y} \Rightarrow x = y$ تابع است ✓

د) $xy^2 + 2x - y^2 - 2y = 0 \Rightarrow x(y^2 + 2) = y(y^2 + 2) \Rightarrow x = y$ تابع است ✓

$|x-1| \geq 2 \Rightarrow x-1 \geq 2 \Rightarrow x \geq 3$ یا $x-1 \leq -2 \Rightarrow x \leq -1$
 I) $2(-1)^2 - b$
 II) $a + 2(-1)$

$2-b = a-2 \Rightarrow a+b=4$

$\sqrt{a-bx-x^2} \Rightarrow -x^2 - bx + a \geq 0$



$p = \frac{c}{a} = \frac{a}{-1} \Rightarrow -a = b \times a$

$S = -\frac{b}{a} = -b = a+b \Rightarrow 2b = -a = b \times a \Rightarrow \begin{cases} a=2 \\ b=-1 \end{cases} \Rightarrow a+b=1$

$ax^2 + bx + c \geq 0 \rightarrow (-\infty, 2) \Rightarrow$ $\rightarrow b^2 - 4ac = 0$

 $b < 0, a = 0$
 $b < 0, a = 0$

$bx + c \xrightarrow{x=2} 2b + c = 0 \Rightarrow c = -2b$

$3a + c - 3|b| = 3(0) - 2b - 3(-b) = b$

الف) $\sqrt[3]{\frac{1}{|x| - [x]}}$ چون $\frac{1}{|x| - [x]}$ از نظر علامت نراست می آید $|x| - [x] \neq 0 \Rightarrow |x| \neq [x] \Rightarrow x \notin \mathbb{W}$
 $D_f = \mathbb{R} - \mathbb{W}$

ب) $\sqrt{x} + \sqrt{y} = 9 \Rightarrow$ I) $x \geq 0$ II) $9 - \sqrt{x} \geq 0 \Rightarrow 9 \geq \sqrt{x} \Rightarrow 81 \geq x$

$I \cap II = 0 \leq x \leq 81$
 $D_f = [0, 81]$

$\omega) f(x) = \sqrt{\log \frac{3x-1}{x}} \Rightarrow$ I) $x > 0$ III) $3x-1 > 0$ IV) $\log \frac{3x-1}{x} > 0 \Rightarrow 3x-1 > 1 \Rightarrow x > \frac{2}{3}$ $\Rightarrow$ II) $x \neq 1$ $x > \frac{1}{3}$ $I \cap II \cap III \cap IV = x > \frac{2}{3}, x \neq 1 \quad D_f = [\frac{2}{3}, +\infty) - \{1\}$ ب) $\log \frac{1}{6+\sqrt{ x }- x } \Rightarrow$ I) $x > 0 \checkmark$ II) $6+\sqrt{ x }- x \neq 0 \Rightarrow x - \sqrt{ x } \neq 6 \Rightarrow x \neq \pm 9$ III) $\frac{1}{6+\sqrt{ x }- x } > 0 \xrightarrow{\sqrt{ x }=t} \frac{1}{-t^2+t+6} \Rightarrow \frac{-9+9}{-4+4} \hookrightarrow I \cap II \cap III = D_f = (-9, 9)$	6
$\sqrt{\frac{3x+2}{x+b}} + a \quad D_f = (2, +\infty) \cup$ بافتوجه به مثبت درون عبارت صورت از $x=2$ $2+b=0 \Rightarrow b=-2 \rightarrow$ ریشه	7
$\sqrt{f(x)-x+1} \Rightarrow f(x)-x+1 > 0$ I) $x > 5 \Rightarrow 2x-1-x+1 > 0 \Rightarrow x > 0 \checkmark \Rightarrow x > 5$ II) $x < 5 \Rightarrow 4x+3-x+1 > 0 \Rightarrow 3x+4 > 0 \Rightarrow 3x > -4 \Rightarrow x > -\frac{4}{3}$ $\hookrightarrow -\frac{4}{3} < x < 5$ $I \cap II \Rightarrow -\frac{4}{3} < x \Rightarrow D_f = [-\frac{4}{3}, +\infty)$	8
$\frac{24x^3+36x^2+18x+3}{(4x^2+4x+1)^2} = \frac{3(8x^3+12x^2+6x+1)}{((2x+1)^2)^2} = \frac{3(2x+1)^3}{(2x+1)^4} = \frac{3}{2x+1}$ $2x+1 \neq 0 \Rightarrow 2x \neq -1 \Rightarrow x \neq -\frac{1}{2} \quad D_f = \mathbb{R} - \{-\frac{1}{2}\}$	9
$y = \sqrt{1-\log(2x-a)} \Rightarrow$ I) $2x-a > 0 \Rightarrow 2x > a \Rightarrow x > \frac{a}{2} \quad D_f = (\frac{a}{2}, \frac{10+a}{2}]$ II) $1-\log(2x-a) > 0 \Rightarrow 1 > \log(2x-a) \Rightarrow 10 > 2x-a \Rightarrow \frac{10+a}{2} > x$ $b = \frac{a}{2}, c = \frac{10+a}{2} \Rightarrow c-b = \frac{10+a-a}{2} = \frac{10}{2} = 5$	10