

19170

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره 1 کلاس دوازدهم A

الف) $y^3 - 2x^2 = 2x - 1 \rightarrow y^3 = 2x^2 + 2x - 1 \rightarrow y = \sqrt[3]{2x^2 + 2x - 1}$ تابع است $x = \frac{\pi}{4} \rightarrow y = \frac{\pi}{4}$
 ب) $x \cos y = y \cos x \xrightarrow{x=\frac{\pi}{4}} \frac{\pi}{4} \cos y = y \cos \frac{\pi}{4} \rightarrow \cos y = 0$ 
 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) $xy^2 + 2x - y^3 - 2y = 0 \rightarrow x(y^2+2) - y(y^2+2) = 0 \rightarrow (y^2+2)(x-y) = 0 \rightarrow x-y=0 \rightarrow x=y$ تابع است

$f(x) = \begin{cases} 2x^2 - b & |x-1| \geq 2 \\ a+2x & -2 \leq x \leq -1 \end{cases}$ $|x-1| \geq 2 \rightarrow \begin{cases} x-1 \geq 2 \rightarrow x \geq 3 \\ x-1 \leq -2 \rightarrow x \leq -1 \end{cases}$ $(-\infty, -1] \cup [3, +\infty)$

$\rightarrow x = -1 \rightarrow a - 2 = 2 - b \rightarrow a + b = 6$
 در هر دو معادله صدق می کند

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

$b = -1$
 $a = 2 \rightarrow a + b = 1$

$x = a \rightarrow -a^2 - ab + a = 0 \rightarrow a(a - b + 1) = 0 \rightarrow a \neq 0 \rightarrow a = 1 - b$

$x = b \rightarrow -b^2 - b^2 + a = 0 \rightarrow -2b^2 = -a \rightarrow 2b^2 = 1 - b \rightarrow 2b^2 + b - 1 = 0 \rightarrow b = -1 \checkmark$
 $b = \frac{1}{2}$ غلط
 $b \in \mathbb{Z}$

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

$D_f = (-\infty, 2)$

$\frac{2}{0} = \infty$

غیر منافع $\Rightarrow a = 0$

$ax^2 + bx + c \rightarrow a = 0 \rightarrow bx + c > 0$

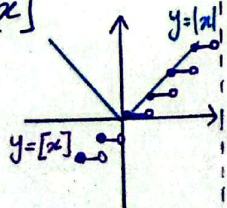
$2b + c = 0 \rightarrow b = -\frac{c}{2}$

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

الف) $f(x) = \sqrt[3]{\frac{1}{|x| - [x]}}$

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

$D_f = \mathbb{R} - (\mathbb{Z} \cup \{0\})$



ب) $f(x) = \sqrt{x} + \sqrt{y} = 9$

$I \Rightarrow x, y \geq 0$

$\sqrt{y} = 9 - \sqrt{x} \rightarrow 9 - \sqrt{x} \geq 0 \rightarrow 9 \geq \sqrt{x}$

$II \rightarrow x \leq 81$

$D_f = [0, 81]$

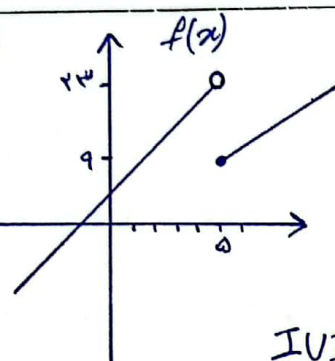
$f(x) = \sqrt{\log^3 x - 1}$
 $I \Rightarrow 3x - 1 > 0 \rightarrow x > \frac{1}{3}$
 $II \Rightarrow x > 0, x \neq 1$
 $III \Rightarrow \log^3 x - 1 \geq 0 \rightarrow 3x - 1 \geq 1$
 $3x \geq 2 \rightarrow x \geq \frac{2}{3}$
 $D_f = [\frac{2}{3}, +\infty) - \{1\}$

$f(x) = \log \frac{1}{4 + \sqrt{|x|} - |x|}$
 $4 + \sqrt{|x|} - |x| > 0$
 $\sqrt{|x|} = t \rightarrow -(t^2 - 4) > 0 \rightarrow t^2 - 4 < 0 \rightarrow (t-2)(t+2) < 0$
 $-2 < \sqrt{|x|} < 2 \rightarrow \sqrt{|x|} < 2 \rightarrow |x| < 4$
 $-4 < x < 4$
 $D_f = (-4, 4)$

$f(x) = \sqrt{\frac{3x+2}{x+b}} + a \rightarrow \frac{3x+2+a(x+b)}{x+b} \geq 0$
 $D_f = (2, +\infty) \rightarrow \frac{2}{-1} = -2$
 تعریف نشده

کجیس ۵ ریشه منخرج است $b = -2$
 $\frac{(a+3)x + ab + 2}{x+b}$
 $\frac{a+3}{-2}$

$f(x) = \begin{cases} 2x-1 & [x] > 4 \\ 5x+3 & [x] \leq 4 \end{cases}$
 $[x] > 4 \rightarrow x > 5$
 $[x] \leq 4 \rightarrow x \leq 5$



$y = \sqrt{f(x) - x + 1} \rightarrow f(x) - x + 1 \geq 0$
 $f(x) \geq x - 1$
 $I \ 5x+3 \geq x-1 \rightarrow 4x \geq -4 \rightarrow x \geq -1$
 $II \ 2x-1 \geq x-1 \rightarrow x \geq 0$
 $I \cup II \Rightarrow D_f = [-1, +\infty)$

$y = \frac{25x^3 + 34x^2 + 11x + 3}{(5x^2 + 4x + 1)^2} \rightarrow \frac{3(2x+1)^3}{14(x+\frac{1}{2})^2} = \frac{3(2x+1)^3}{1(2x+1)^2}$
 $\rightarrow \frac{3}{1(2x+1)} \rightarrow D_f = \mathbb{R} - \{-\frac{1}{2}\}$

$y = \sqrt{1 - \log(2x-a)}$
 $I \Rightarrow 2x-a > 0 \rightarrow 2x > a \rightarrow x > \frac{a}{2}$
 $II \Rightarrow 1 - \log^2 x - a \geq 0 \rightarrow \log^2 x - a \leq 1$
 $2x-a \leq 1 \rightarrow 2x \leq a+1 \rightarrow x \leq \frac{a+1}{2}$
 $\frac{a}{2} < x \leq \frac{a+1}{2}$
 $D_f = (b, c] \rightarrow b = \frac{a}{2} \rightarrow c-b = \frac{a+1}{2} - \frac{a}{2} = \frac{1}{2} = (a)$
 $c = \frac{a+1}{2}$