نام و نام خانوادگی ......ملیکا کریمی...... پاسخنامه تشریحی تکلیف شماره ..۲.... کلاس ....یازدهم دختر c.........

۱

$2x^2 + y^2 - 4x + 6y + k = 0 \xrightarrow{\text{تبدیل به مربع کامل}} 2(x-1)^2 + (y+3)^2 = 0$

$\Rightarrow 2x^2 + 2 - 2x + y^2 + 6x + 9 \Rightarrow k = 2+9 = \boxed{11}$

$(1, -3)$ فقط یک نقطه

۲

$f(x) = \begin{cases} x^2 + 4x & ; x \geq a \\ 2x + a + 2 & ; x \leq a \end{cases} \xrightarrow{x=a} a^2 + 4a = 3a + 2$

$\Rightarrow a^2 + a + 2 = 0$

$\longrightarrow (a+2)(a-1) = 0 \begin{cases} a = 1 \\ a = -2 \end{cases} \xrightarrow{a>0} \boxed{a=1} \Rightarrow f(x) = \begin{cases} x^2 + 4x ; & x \geq 1 \\ 2x + 3 ; & x \leq 1 \end{cases}$

$f(1) = 1^2 + 4(1) = \boxed{5}$

۳

$f(x) = \begin{cases} 2x^2 - b & ; |x+1| \geq 2 \\ a + 2x & ; -3 \leq x \leq -1 \end{cases}$

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

$x = -3 \Rightarrow \underbrace{2(-3)^2}_{18} - b = a + \underbrace{2(-3)}_{-6}$

$\Rightarrow \boxed{a + b = 24}$

۴

$y = \sqrt{6x - a} + \sqrt{b - 3x}$

$x = 2$ هر دو صفر شوند $\Rightarrow$

$6x - a \xrightarrow{x=2} 12 - a = 0 \to \boxed{a = 12}$

$b - 3x \xrightarrow{x=2} b - 6 = 0 \to \boxed{b = 6}$

$\boxed{\frac{b}{a} = \frac{6}{12} = \frac{1}{2}}$

۵

الف) $y = \sqrt{\frac{x+1}{|x-3|}} + \sqrt{\frac{6-x}{x^2+2x+4}}$

$\frac{x+1}{|x-3|} \geq 0$: -1, 3^* ; $- \; + \; + $

$x^2 + 2x + 4 \to$ همواره مثبت $\to$ کافی است

$6 - x \geq 0 \to x \leq 6$

$\Rightarrow \boxed{D_f = [-1, 6] - \{3\}}$

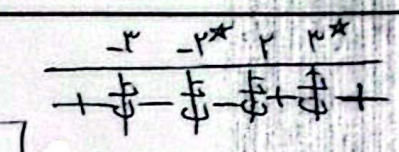
ب) $y = \sqrt{[x] - 4} + \sqrt{2 - [x]}$

$[x] - 4 \geq 0 \to [x] \geq 4 \to x \geq 4$

$2 - [x] \geq 0 \to [x] \leq 2 \to x < 3$

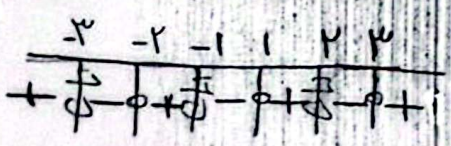
$\xrightarrow{\cap} \varnothing \Rightarrow \boxed{D_f = \varnothing}$

ب) $y=\sqrt{\frac{x^2-x-4}{x^4-12x^2+32}} \Rightarrow \frac{(x-4)(x+2)}{(x-4)(x+4)(x-2)(x+2)} \geq 0$



$\Rightarrow D_f = (-\infty,-2) \cup (2,+\infty) - \{2\}$

ج) $y=\sqrt{\frac{x^3-2x^2-5x+4}{x^3+2x^2-5x-4}} \Rightarrow \frac{(x-1)(x-4)(x+4)}{(x+1)(x+4)(x-1)} \geq 0$



$D_f = (-\infty,-4) \cup [-2,-1) \cup [1,4) \cup [4,+\infty)$

د) $y=\sqrt{[-x]-2} \rightarrow [-x]-2 \geq 0 \rightarrow [-x] \geq 2 \rightarrow -x \geq 2 \rightarrow x \leq -2$

$D_f = (-\infty,-2]$

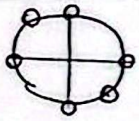
ه) $y=\frac{5x^2+4}{[x]^2-2[x]-3} \rightarrow [x]^2-2[x]-3 \neq 0 \rightarrow ([x]-3)([x]+1) \neq 0$

$\rightarrow [x]-3 \neq 0 \rightarrow [x] \neq 3 \rightarrow x \neq [3,4)$

$[x]+1 \neq 0 \rightarrow [x] \neq -1 \rightarrow x \neq [-1,0)$

$D_f = \mathbb{R} - ([3,4) \cup [-1,0))$

و) $y=\frac{\cot x+1}{\tan x+1} \Rightarrow \sin x \neq 0$, $\cos x \neq 0$, $\tan x+1 \neq 0 \rightarrow \tan x \neq -1$



$\Rightarrow D_f = \mathbb{R} - \left\{\frac{k\pi}{2}, k\pi - \frac{\pi}{4}\right\}$

ز) $y=\sqrt{1-4\sin^2 x} \Rightarrow 1-4\sin^2 x \geq 0 \rightarrow \sin^2 x \leq \frac{1}{4} \rightarrow -\frac{1}{2} \leq \sin x \leq \frac{1}{2}$

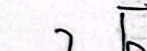
$\Rightarrow D_f = \left[k\pi - \frac{\pi}{6}, k\pi + \frac{\pi}{6}\right]$

ح) $y=\sqrt{1-\log_{\frac{1}{2}}^{x-1}} \Rightarrow x-1>0 \rightarrow x>1$

$1-\log_{\frac{1}{2}}^{x-1} \geq 0 \Rightarrow \log_{\frac{1}{2}}^{x-1} \leq 1 \rightarrow x-1 \geq \frac{1}{2} \rightarrow x \geq \frac{3}{2}$

$D_f = \left[\frac{3}{2},+\infty\right)$

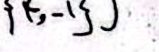
ط) $y=\frac{\sqrt{x^2-x}}{1-\log_4^{x^2-3x}} \Rightarrow x^2-x \geq 0 \rightarrow x(x-1) \geq 0$



$1-\log_4^{x^2-3x} \neq 0 \rightarrow \log_4^{x^2-3x} \neq 1 \rightarrow x^2-3x \neq 4$

$\Rightarrow x^2-3x-4 \neq 0 \rightarrow (x-4)(x+1) \neq 0 \rightarrow x \neq \{4,-1\}$

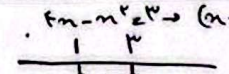
$x^2-3x > 0 \rightarrow x(x-3) > 0$



$\Rightarrow D_f = (-\infty,0) \cup (3,+\infty) - \{4,-1\}$

ی) $y=\sqrt{2^{4x-x^2}-8} \rightarrow 2^{4x-x^2}-8 \geq 0$

$4x-x^2 \geq 3 \rightarrow (x-3)(x-1) \leq 0$



$\Rightarrow D_f = [1,3]$

ک) $\left(\frac{3x+5}{2x+4}\right)! \rightarrow \frac{3x+5}{2x+4} \in \mathbb{W} \rightarrow x \in \frac{-4\mathbb{W}+5}{2\mathbb{W}-3}$

$\Rightarrow D_f = \left\{x \mid x = \frac{5-4k}{2k-3},\ k \in \mathbb{W}\right\}$