یاران میرث ولایتی - شماره تکلیف: ۲ - یازدهم دختر C

۱-

$2x^2+y^2-4x+6y+k=0 \rightarrow \square_1+2\square_2=k \Rightarrow 9+2=11$

$\underbrace{y^2+6y+\boxed{9}_1}_{(y+3)^2} + \underbrace{2x^2-4x+2\square_2}_{2(\underbrace{x^2-2x+\boxed{1}_2}_{(x-1)^2})} = 0$

۲-

$a^2+4a=2a+a+2 \rightarrow a^2+a-2=0$

$(a+2)(a-1)=0 <$ $a=-2$ غ ق ق، $a=1$ ق ق $\Rightarrow x=1 \rightarrow 1+4=5$, $2+1+2=5$

۳-

$|x+1|\geq 2 \rightarrow x\geq 1$

$\rightarrow x\leq -3 \Rightarrow x=-3 \rightarrow 18-b=a-6 \rightarrow a+b=24$

۴-

$x=2 <$ $12-a=0 \rightarrow a=12$ ، $b-6=0 \rightarrow b=6$ $\Rightarrow \frac{b}{a}=\frac{6}{12}=\frac{1}{2}$

۵-

$\frac{x+1}{|x-3|}\geq 0 \rightarrow x\geq -1$ (همواره مثبت) ، $\frac{6-x}{x^2+2x+4}\geq 0 \rightarrow x\leq 6 \xRightarrow{\cap}$ -1 ، 6 $\rightarrow D_f=[-1,6]$ (فاقد ریشه ها و دارای دلتای منفی)

ب) $[x]-4\geq 0$ ، $2-[x]\geq 0 \xRightarrow{\cap}$ 3 ، 4 $\rightarrow D_f=\varnothing$

$[x]\geq 4 \rightarrow x\geq 4$ ، $[x]\leq 2 \rightarrow x<3$

۶-

الف) $\frac{(x-3)(x+2)}{\underbrace{(x^2-4)}_{(x-2)(x+2)}\underbrace{(x^2-9)}_{(x-3)(x+3)}}\geq 0 \rightarrow$ $-\infty$ -3 -2^* 2 3^* $+\infty$: $+$ $-$ $-$ $+$ $+$ $\rightarrow D_f=(-\infty,-3)\cup(2,+\infty)-\{3\}$

ب) $\frac{x^3-2x^2-5x+6}{x^3+2x^2-5x-6} \xrightarrow[\div x+1]{\div x-1} \frac{(x-1)(x-3)(x+2)}{(x+1)(x+3)(x-2)}\geq 0 \rightarrow$ $-\infty$ -3 -2 -1 1 2 3 $+\infty$: $+$ $-$ $+$ $-$ $+$ $-$ $+$

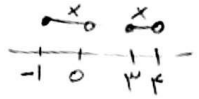
$D_f=(-\infty,-3)\cup[-2,-1)\cup[1,2)\cup[3,+\infty)$

۷-

الف) $[-x]-2\geq 0 \rightarrow [-x]\geq 2 \rightarrow -x\geq 2$, $x\leq -2 \Rightarrow D_f=(-\infty,-2]$

ب) $[x]^2 - 2[x] - 3 \neq 0$

$([x]-3)([x]+1) \neq 0$ ⟶ $[x] \neq 3 \rightarrow \mathbb{R} - [3,4)$; $[x] \neq -1 \rightarrow \mathbb{R} - [-1,0)$



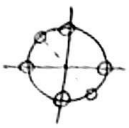
$D_f = (-\infty,-1) \cup [0,3) \cup [4,+\infty)$

۸- ب)

$\cot x = \frac{\cos x}{\sin x} \rightarrow \sin x \neq 0$

$\tan x = \frac{\sin x}{\cos x} \rightarrow \cos x \neq 0$

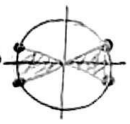
$\tan x \neq -1$



$\Rightarrow D_f = \mathbb{R} - \left\{ \frac{k\pi}{2}, k\pi + \frac{3\pi}{4} \right\}$

ب) $1 - 4\sin^2 x \geq 0 \rightarrow 4\sin^2 x \leq 1 \rightarrow -\frac{1}{2} \leq \sin x \leq \frac{1}{2} \rightarrow$

$\sin^2 x \leq \frac{1}{4}$

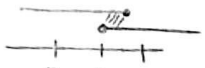


$\Rightarrow$

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

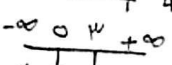
۹- الف) $1 - \log_{\frac{1}{2}}^{x-1} \geq 0 \rightarrow \log_{\frac{1}{2}}^{x-1} \leq 1 \rightarrow x-1 \geq \frac{1}{2}$

$x \leq \frac{3}{2}$ ، $x-1 > 0$ ، $x > 1$ ⟶ $D_f = (1, \frac{3}{2}]$



ب) $x^2 - x \geq 0 \rightarrow x(x-1) \geq 0 \rightarrow$

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

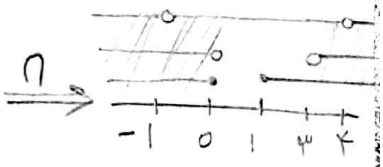


$1 - \log_4^{x^2-3x} \neq 0 \rightarrow \log_4^{x^2-3x} \neq 1 \Rightarrow x^2 - 3x \neq 4$

$x^2 - 3x - 4 \neq 0$

$(x-4)(x+1) \neq 0$

$x \neq 4, -1$

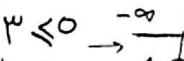


$D_f = (-\infty,-1) \cup (-1,0) \cup (0,1) \cup (3,4) \cup (4,+\infty)$

۱۰- الف) $x^{-x^2+4x} \geq 2^3 \rightarrow -x^2 + 4x \geq 3$

$x^2 - 4x + 3 \leq 0$

$(x-1)(x-3) \leq 0$ →



$\rightarrow D_f = [1,3]$

ب) $\frac{3x+a}{2x+4} \in \mathbb{W} \rightarrow x = -\frac{4w-a}{3w-3}$ $\Rightarrow D_f = \left\{ x \mid x = -\frac{4k-a}{2k-3}, k \in \mathbb{W} \right\}$