نام و نام خانوادگی .آرمین مبین‌....... پاسخنامه تشریحی تکلیف شماره ۲....... کلاس .یازدهم تجربی B..........

۱

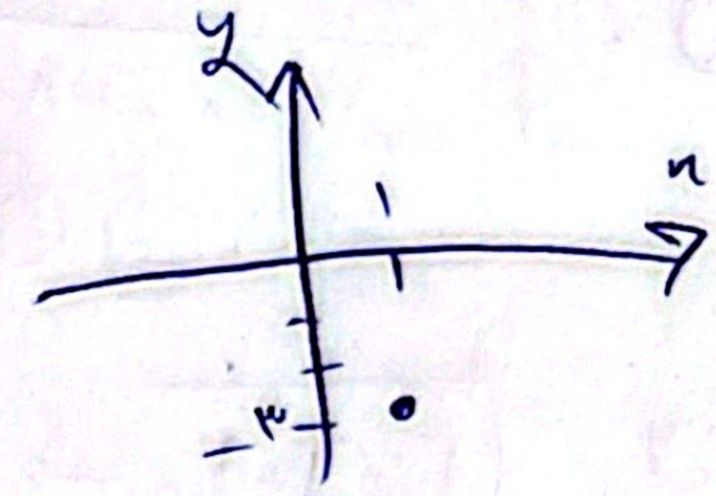
$2x^2+y^2-4x+6y+k=0$

$\downarrow$

$(y+3)^2-9+2(x-1)^2-2+k=0$

$\downarrow$

$(y+3)^2+2(x-1)^2=11-k$



$(y+3)^2\geq 0$, $2(x-1)^2\geq 0 \longrightarrow 11-k=0 \longrightarrow 11=k$

تابع تک نقطه $(1,-3)$

۲

$f(a)=a^2+4a=3a+2$

$a^2+a-2=0 \longrightarrow a=1,\ a=-2 \xrightarrow{a>0} a=1$

$(a+2)(a-1)=0$

$\Rightarrow f(x)=\begin{cases} x^2+4x & ; x\geq 1 \\ 2x+3 & ; x\leq 1 \end{cases}$

$f(1)=1+4=5$

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

۳

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

$x+1\geq 2 \to x\geq 1$

$x+1\leq -2 \to x\leq -3$

$f(-3)=18-b=a-6$

$24=a+b$

۴

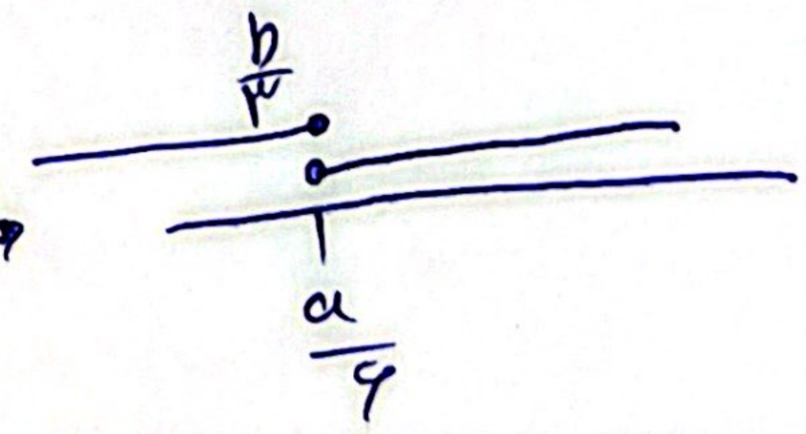
$y=\sqrt{6x-a}+\sqrt{b-3x}$

$\downarrow$

$D_f=\{2\}$

$6x-a\geq 0 \quad b-3x\geq 0 \longrightarrow$

$x\geq \frac{a}{6}$ (I) $\quad \frac{b}{3}\geq x$ (II)



$\Rightarrow \frac{b}{3}=\frac{a}{6}=2$

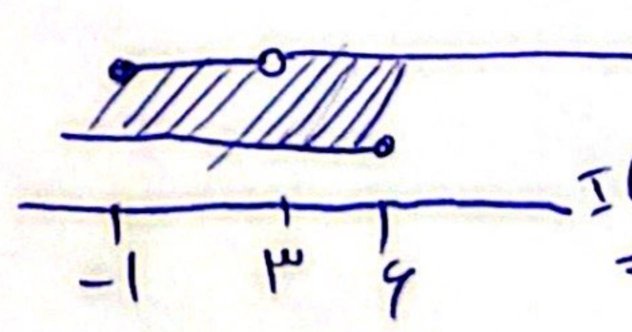
$b=6,\ a=12 \to \frac{b}{a}=\frac{6}{12}=\frac{1}{2}$

۵

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

	-1		3	
I: $-$	0	$+$	$\nexists$	$+$

	6	
II: $+$	0	$-$

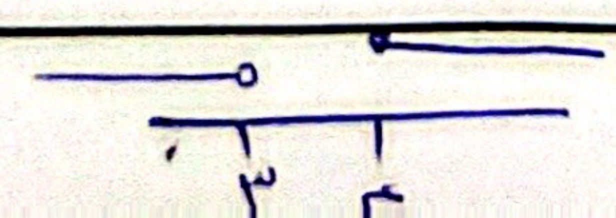


$\xrightarrow{I\cap II} D_f=[-1,6]-\{3\}$

ب) $y=\sqrt{[x]-4}+\sqrt{2-[x]} \longrightarrow 2-[x]\geq 0$

$[x]-4\geq 0 \to [x]\geq 4 \to x\geq 4$ (I)

$2\geq [x] \to x<3$ (II) $\xrightarrow{I\cap II} D_f=\varnothing$



الف) $y=\sqrt{\dfrac{x^2-x-6}{x^4-13x^2+36}}$

$x^2-x-6=(x-3)(x+2)$

$x^4-13x^2+36=(x^2-9)(x^2-4)=(x-3)(x+3)(x-2)(x+2)$

-3		-2		2		3	
$+$		$-$		$-$		$+$	$+$

$D_f=(-\infty,-3)\cup(2,3)\cup(3,+\infty)$ ۶

ب) $y=\sqrt{\dfrac{x^3-2x^2-5x+6}{x^3+2x^2-5x-6}}$

$x^3-2x^2-5x+6=(x-1)(x+2)(x-3)$

$x^3+2x^2-5x-6=(x+1)(x-2)(x+3)$

-3	-2	-1	1	2	3	
$+$	$-$	$+$	$-$	$+$	$-$	$+$

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

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

$[-x]\geq 2\rightarrow -x\geq 2$

$x\leq -2\rightarrow D_f=(-\infty,-2]$ ۷

ب) $y=\dfrac{5x^2+6}{[x]^2-2[x]-3}\rightarrow [x]^2-2[x]-3\neq 0$

$([x]-3)([x]+1)\neq 0$

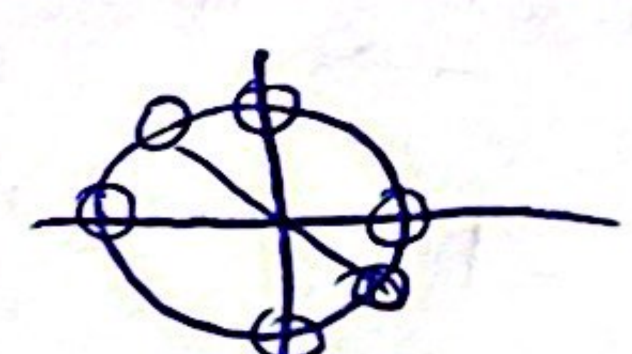
$[3,4)$ $\quad$ $[-1,0)$

-1	0	3	4	
$+$		$-$		$+$

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

الف) $y=\dfrac{\cot x+1}{\tan x+1}=\dfrac{\frac{\cos x}{\sin x}+1}{\frac{\sin x}{\cos x}+1}$

$\cos x,\sin x\neq 0\ ,\ \tan x\neq -1$

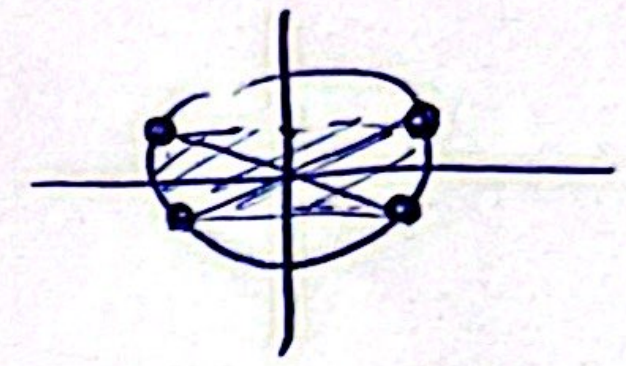


$\rightarrow D_f=\mathbb{R}-\left\{\frac{k\pi}{2},k\pi-\frac{\pi}{4}\right\}$ ۸

۸) ب) $y = \sqrt{1-4\sin^2 x} \to 1-4\sin^2 x \geq 0$

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

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



۹) الف) $y = \sqrt{1-\log_{\frac{1}{2}}^{x-1}} \to 1-\log_{\frac{1}{2}}^{x-1} \geq 0$

$1 \geq \log_{\frac{1}{2}}^{x-1}$

$\frac{1}{2} \leq x-1 \to \frac{3}{2} \leq x \to D_f = \left[\frac{3}{2}, +\infty\right)$

۹) ب) $\dfrac{\sqrt{x^2-x}}{1-\log_4^{x^2-3x}} \to$ ① $x^2-x \geq 0 \to$

0		1	
+	0 −	0	+

0 ^ 1

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

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

$x \neq 4$

$x \neq -1$

0 3

$x^2-3x>0$

0		3	
+	0 −	0	+

→ ③

$1 \cap 2 \cap 3 \to D_f = (-\infty, 0) \cup (3, +\infty) - \{-1, 4\}$

۱۰) الف) $y = \sqrt{2^{4x-x^2}-8}$ → $2^{4x-x^2}-8 \geq 0 \to 2^{4x-x^2} \geq 8\ 2^3$

$4x-x^2 \geq 3$

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

$0 \geq (x-3)(x-1)$

1		3	
+	0 −	0	+

$D_f = [1, 3]$

۱۰) ب) $y = \left(\frac{3x+5}{2x+4}\right)! \to \frac{3x+5}{2x+4} \in W$

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