کرینا دیباجی   یازدهم تک پایه A   تکلیف سری ۷

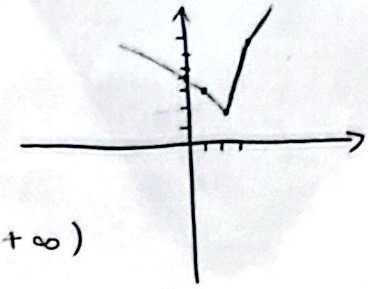
۱۹,۵

① ۲

الف) $y = x + |2x - 4|$

۲	
$x - 2x + 4$	$x + 2x - 4$
$-x + 4$	$3x - 4$

$\begin{bmatrix}0\\4\end{bmatrix}\begin{bmatrix}1\\3\end{bmatrix}\begin{bmatrix}2\\2\end{bmatrix}\begin{bmatrix}3\\5\end{bmatrix}$

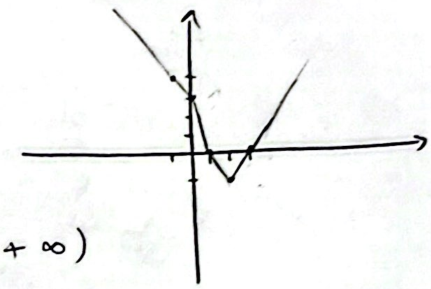


$R_f = [+2, +\infty)$

ب) $y = |x - 2| + |x - 1| - |x|$

۰	۱	۲	
$-x + 2 - x + 1 + x$	$-x + 2 - x + 1 - x$	$-x + 2 + x - 1 - x$	$x - 2 + x - 1 - x$
$-x + 3$	$-3x + 3$	$-x + 1$	$x - 3$

$\begin{bmatrix}-1\\4\end{bmatrix}\begin{bmatrix}0\\3\end{bmatrix}\begin{bmatrix}1\\0\end{bmatrix}\begin{bmatrix}2\\-1\end{bmatrix}\begin{bmatrix}3\\0\end{bmatrix}$



$R_f = [-1, +\infty)$

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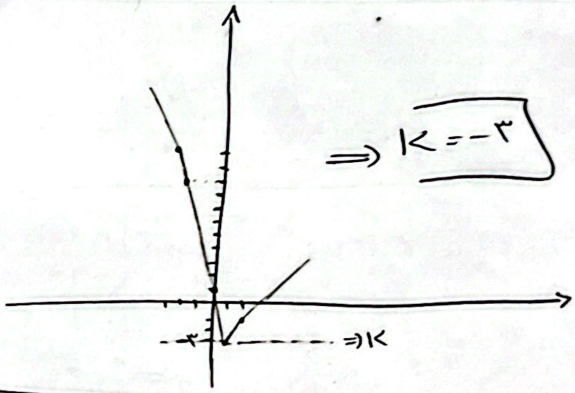
② ۵

$|3x - 3| - |x + 2| = k$

-2	۱	
$-3x + 3 + x + 2$	$-3x + 3 - x - 2$	$3x - 3 - x - 2$
$-2x + 5$	$-4x + 1$	$2x - 5$

$\begin{bmatrix}-3\\11\end{bmatrix}\begin{bmatrix}-2\\9\end{bmatrix}\begin{bmatrix}0\\1\end{bmatrix}\begin{bmatrix}1\\-3\end{bmatrix}\begin{bmatrix}2\\-1\end{bmatrix}$



$\Rightarrow k = -3$

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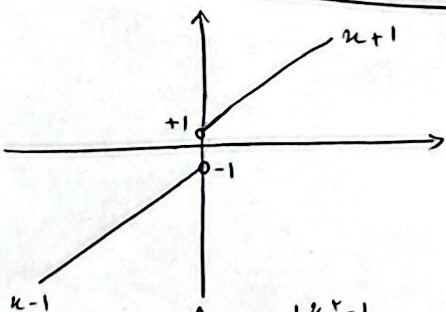
③ ۵

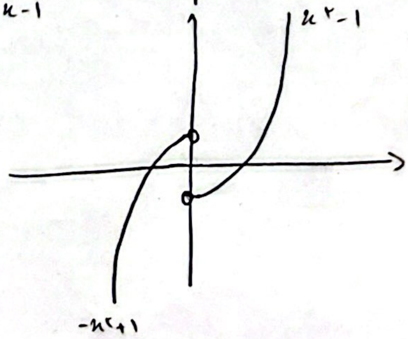
الف) $y = x + \frac{x}{|x|}$ $x \neq 0$

$$\text{if} \begin{cases} x > 0 \Rightarrow x + \frac{x}{x} = x + 1 \\ x < 0 \Rightarrow x + \frac{x}{-x} = x - 1 \end{cases} \Rightarrow$$



ب) $x|x| - \frac{x}{|x|}$ $x \neq 0$

$$\text{if} \begin{cases} x > 0 \Rightarrow x \times x - \frac{x}{x} = x^2 - 1 \\ x < 0 \Rightarrow x \times -x - \frac{x}{-x} = -x^2 + 1 \end{cases} \Rightarrow$$



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(۴)

الف) $y=[x]-2x \quad -2\le x\le 2$

① $-2\le x<-1 \xrightarrow{[x]=-2} y=-2-2x$

x	-2	-1
y	2	0

② $-1\le x<0 \xrightarrow{[x]=-1} y=-1-2x$

x	-1	0
y	1	-1

③ $0\le x<1 \xrightarrow{[x]=0} y=-2x$

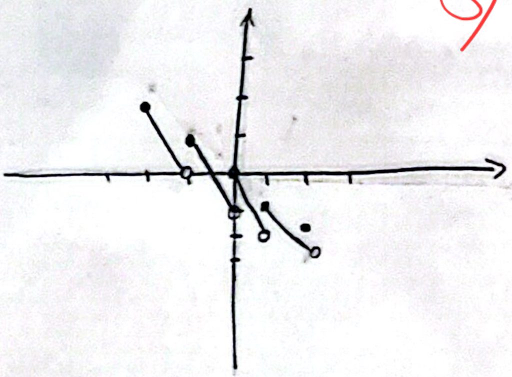
x	0	1
y	0	-2

④ $1\le x<2 \xrightarrow{[x]=1} y=1-2x$

x	1	2
y	-1	-3

⑤ $+2 \xrightarrow{[x]=2} y=2-2x$

x	2
y	-2



ب) $y=[x]\,|x|$

① $-2\le x<-1 \xrightarrow{[x]=-2} y=2x$

x	-2	-1
y	-4	-2

② $-1\le x<0 \xrightarrow{[x]=-1} y=x$

x	-1	0
y	-1	0

③ $0\le x<1 \xrightarrow{[x]=0} y=0$

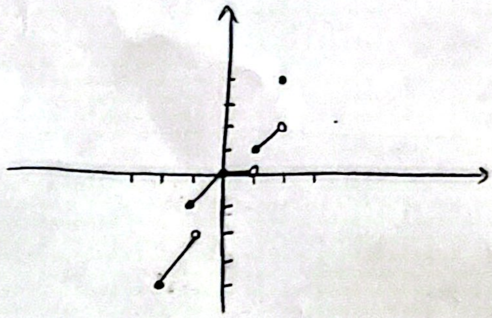
x	0	1
y	0	0

④ $1\le x<2 \xrightarrow{[x]=1} y=x$

x	1	2
y	1	2

⑤ $+2 \xrightarrow{[x]=2} y=2x$

x	2
y	4



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(۵)

الف) $y=3x-[3x] \Rightarrow 0\le x-[x]<1 \Rightarrow 0\le 3x-[3x]<1 \Rightarrow R_f=[0,1)$

ب) $y=4x-4[x] \Rightarrow 4(x-[x]) \Rightarrow 0\le x-[x]<1 \overset{\times 4}{\Rightarrow} 0\le 4(x-[x])<4$
$\Rightarrow R_f=[0,4)$

ج) $y=x-5[\frac{x}{5}] \Rightarrow 5(\frac{x}{5}-[\frac{x}{5}]) \Rightarrow 0\le\frac{x}{5}-[\frac{x}{5}]<1 \overset{\times 5}{\Rightarrow} 0\le 5(\frac{x}{5}-[\frac{x}{5}])<5$
$\Rightarrow R_f=[0,5)$

د) $y=[2x]-2x \Rightarrow -1<[x]-x\le 0 \Rightarrow -1<[2x]-2x\le 0 \Rightarrow R_f=(-1,0]$

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(۶)

الف) $y=3\sin x+2\cos x \Rightarrow -\sqrt{a^2+b^2}\le a\sin x+b\cos x\le\sqrt{a^2+b^2}$

$\Rightarrow -\sqrt{9+4}\le 3\sin x+2\cos x\le\sqrt{9+4} \Rightarrow R_f=[-\sqrt{13},+\sqrt{13}]$

ب) $y=4\sin x-3\cos x \Rightarrow -\sqrt{16+9}=-5 \quad \sqrt{16+9}=5 \Rightarrow R_f=[-5,5]$

ج) $y=[2\sin x+5\cos x] \Rightarrow \underbrace{-\sqrt{4+25}}_{-\sqrt{29}}\le 2\sin x+5\cos x\le\underbrace{\sqrt{4+25}}_{\sqrt{29}}$

$\Rightarrow \{-6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5 \Rightarrow R_f=\{-6,-5,-4,-3,-2,-1,0,1,2,3,4,5\}$

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د) $y=\sqrt{\cos x-2\sin x} \Rightarrow -\sqrt{5}\le \cos x-2\sin x\le \sqrt{5} \Rightarrow 0\le \sqrt{\cos x-2\sin x}\le \sqrt[4]{5}$

$\Rightarrow R_f=[0,\sqrt[4]{5}]$

۷

الف) $y=\sin^2 x+3\sin x+2$

$\sin x \xrightarrow{1} 1+3+2=6$

$\xrightarrow{-1} 1-3+2=0$

$\rightarrow \times \quad \sin x\neq -\frac{3}{2}$

$\frac{-3}{2}=\frac{-b}{2a}$

$R_f=[0,6]$

۲

ب) $y=2\sin^2 x+3\sin x+2$

$\sin x \xrightarrow{1} 2+3+2=7$

$\xrightarrow{-1} 2-3+2=1$

$\rightarrow \frac{9}{8}+\frac{-9}{4}+2=\frac{7}{8}$

$\frac{-3}{4}=\frac{-b}{2a}$

$R_f=[\frac{7}{8},7]$

۸

الف) $y=\sin^2 x+4\cos^2 x \Rightarrow \sin^2 x+\cos^2 x+3\cos^2 x \Rightarrow 1+\underbrace{3\cos^2 x}_{[0,3]}$

$\Rightarrow R_f=[1,4]$

۲

ب) $y=\frac{2\cot}{1+\cot^2 x} \Rightarrow \frac{\frac{2\cos x}{\sin x}}{\frac{1}{\sin^2 x}}=\frac{2\cos x\times \sin^2 x}{\sin x}=\sin 2x \Rightarrow R_f=[-1,1]$

۹

الف) $y=\sin^6 x+\cos^6 x \Rightarrow 2^{1-3}\le \sin^{2\times 3}x+\cos^{2\times 3}x\le 1 \Rightarrow \frac{1}{4}\le \sin^6 x+\cos^6 x\le 1$

$\Rightarrow R_f=[\frac{1}{4},1]$

۱,۷۵

ب) $y=[\sin^8 x+\cos^8 x] \Rightarrow 2^{1-4}\le \sin^{2\times 4}x+\cos^{2\times 4}x\le 1 \Rightarrow \frac{1}{8}\le \sin^8 x+\cos^8 x\le 1$

$\Rightarrow [\sin^8 x+\cos^8 x]=\{0,1\} \Rightarrow R_f=[0,1]$ $\{0,1\}$

۱۰

الف) $y=\frac{2x^2+7x-4}{x+4} \Rightarrow$ $2x^2+7x-4 \div (x+4) = 2x-1$; $-2x^2-8x$; $-x-4$; $+x+4$; 0

$-4\neq$ خرج

$\xrightarrow{x=-4} 2\times -4-1=-8-1=-9$

$\Rightarrow R_f=\mathbb{R}-\{-9\}$

۱,۷۵

ب) $y=\frac{x^3-1}{x-1}=\frac{(x-1)(x^2+x+1)}{x-1}=x^2+x+1 \sim \min \;\Big|\; \frac{-b}{2a}=\frac{-1}{2}$, $\frac{1}{4}-\frac{1}{2}+1=\frac{3}{4}$

$\xrightarrow{x=1} 1+1+1=3$

$1\neq$ خرج

$R_f=[\frac{3}{4},+\infty)-\{3\}$