نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس .....

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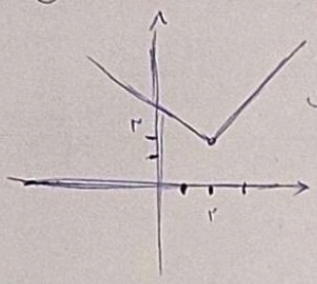
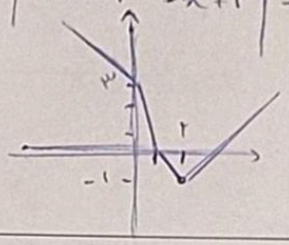
الف) $y = x + |2x - 4|$

x	$-\infty$		2		$+\infty$
$2x-4$	$-2x+4$		0		$2x-4$
y	$-x-2x+4$		$x-2x+4$		$x+2x-4$
	$-3x+4$		$-x+4$		$3x-4$



ب) $y = |x-2| + |x-1| - |x|$

x	$-\infty$		0		1		2		$+\infty$
$x-2$	$-x+2$		$-x+2$		$-x+2$		0		$x-2$
$x-1$	$-x+1$		$-x+1$		0		$x-1$		$x-1$
$-\lvert x\rvert$	$+x$		$+x$		$-x$		$-x$		$-x$
y	$-x+3$		$-3x+3$		$-x+1$		$x-3$		



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

x	$-\infty$		-2		1		$+\infty$
$3x-3$	$-3x+3$		-9		0		$3x-3$
$x+2$	$-x-2$		0		3		$x+2$
y	$-3x+3+x+2$		$-3x+3-x-2$		$3x-3-x-2$		
	$-2x+5$		$-4x+1$		$2x-5$		
	$x = \frac{k+5}{2}$		$x = \frac{1-k}{4}$		$x = \frac{5-k}{2}$		
	غ ق ق ق ق		۲ ق ق ق ق		۲ ق ق ق ق		
	$k \geq -3$		$-3 < k \leq 9$		$k > 9$		

$\longrightarrow k = -3$

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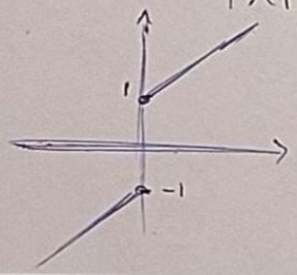
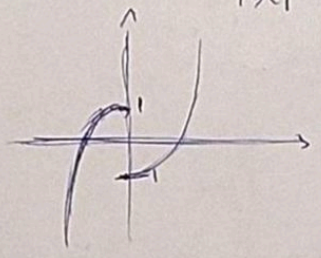
الف) $y = x + \frac{x}{|x|}$



ب) $y = x|x| - \frac{x}{|x|}$



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الف) $y = [x] - 2x$

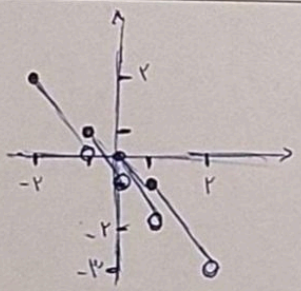
$-2 \leq x < -1 \quad [x] = -2$

$-1 \leq x < 0 \quad [x] = -1$

$0 \leq x < 1 \quad [x] = 0$

$1 \leq x < 2 \quad [x] = 1$

$2 \leq x < 3 \quad [x] = 2$



ب) $y = [x]|x|$

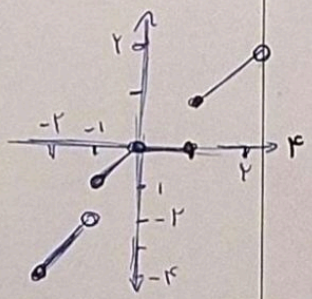
$-2 \leq x < -1 \rightarrow -2x, 2x$

$-1 \leq x < 0 \longrightarrow x, -x$

$0 \leq x < 1 \longrightarrow 0$

$1 \leq x < 2 \rightarrow x, -x$

$2 \leq x < 3 \rightarrow 2x, -2x$



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الف) $y = 3x - [3x] \rightarrow [0, 1)$

ب) $y = 4x - 4[x] \rightarrow [0, 4)$

ج) $y = x - 5\left[\frac{x}{5}\right] \rightarrow [0, 5)$

د) $y = [2x] - 2x \rightarrow [0, -1)$

الف) $y=\sqrt{3}\sin\alpha+\sqrt{2}\cos\alpha$ $\sqrt{3^2+2^2}=\sqrt{14}$ $R_f=[\sqrt{14},-\sqrt{14}]$ ب) $y=2\sin\alpha-\sqrt{3}\cos\alpha$ $\sqrt{2^2+(-\sqrt{3})^2}=\sqrt{7}=3$ $R_f=[3,-3]$ ج) $y=[3\sin\alpha+5\cos\alpha]$ $\sqrt{3^2+5^2}=\sqrt{34}\simeq 6$ $R_f=[\pm 4,\pm 5,\pm 3,\pm 2,\pm 1,0]$ د) $y=\sqrt{\cos\alpha-2\sin\alpha}$ $\sqrt{1^2+(-2)^2}=\sqrt{5}$ $\Longrightarrow[\sqrt{5},-\sqrt{5}]\to\sqrt{\square}\geq 0$ $R_f=[\sqrt{5},0]$	۶
الف) $y=\sin^2\alpha+3\sin\alpha+2\longrightarrow \frac{-b}{2a}=\frac{-3}{2}$ $f(-\frac{3}{2})=-\frac{1}{4}$ min $\longrightarrow$ max $\longrightarrow$ $\sin\alpha=1$ $y=4$ $R_f=[-\frac{1}{4},4]$ ب) $y=2\sin^2\alpha+3\sin\alpha+2\longrightarrow \frac{-b}{2a}=\frac{-3}{4}$ $f(-\frac{3}{4})=\frac{7}{8}$ min $\longrightarrow$ max $\longrightarrow$ $\sin\alpha=1$ $y=7$ $R_f=[\frac{7}{8},7]$	۷
الف) $y=\sin^2\alpha+4\cos^2\alpha=\sin^2\alpha+4(1+\sin^2\alpha)=4-\underbrace{3\sin^2\alpha}_{[-1,1]}$ $R_f=[1,4]$ ب) $y=\frac{2\cot\alpha}{1+\cot^2\alpha}=\frac{2\cot\alpha}{\frac{1}{\sin^2\alpha}}=2\cot\alpha\cdot\sin^2\alpha=2\frac{\cos\alpha}{\sin\alpha}\cdot\sin^2\alpha\Rightarrow$ $2\cos\alpha\sin\alpha=\sin^2\alpha\longrightarrow R_f=[-1,1]$	۸
الف) $y=\sin^4\alpha+\cos^4\alpha$ $\frac{1}{2}\leq y\leq 1$ $R_f=[\frac{1}{2},1]$ ب) $y=[\sin^4\alpha+\cos^4\alpha]$ $\frac{1}{2}\leq y\leq 1$ $R_f=[0,1]$	۹
الف) $y=\frac{2x^2+7x-4}{x+4}\longrightarrow\frac{(2x-1)(x+4)}{(x+4)}\longrightarrow y=2x-1$ $R-[9]$ ب) $y=\frac{x^3-1}{x-1}\longrightarrow\frac{(x^2+x+1)(x-1)}{(x-1)}\longrightarrow y=x^2+x+1$ min $\longrightarrow x=-\frac{1}{2}$ $y=\frac{3}{4}$ $R_f=[\frac{3}{4},+\infty)$	۱۰