نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۲ ..... کلاس سیزدهم تجربی

۱۹٫۵

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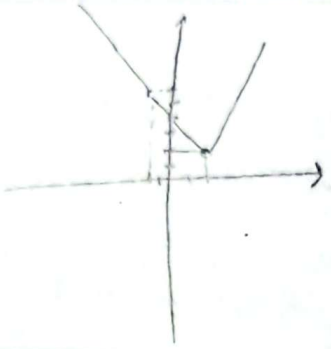
الف) $y = x + |2x-4|$



ب) $y = |x-2| + |x-1| - |x|$

$x=2 \to y=0$

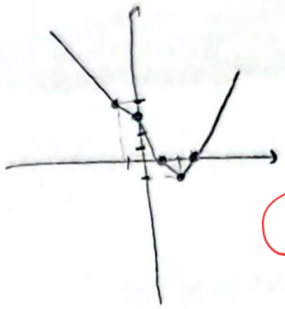
$x=2 \to y=-1$

$x=1 \to y=0$

$x=0 \to y=3$

$x=-1 \to y=4$

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



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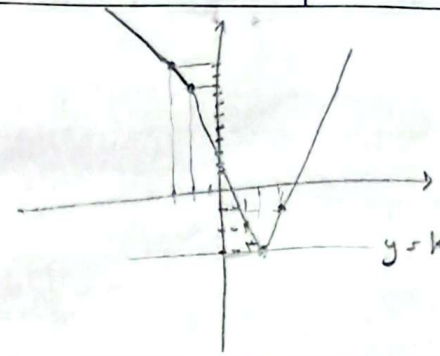
$|3x-3| - |x+2| = k$

$3x-5 \quad x>1$

$-3x+1 \quad -2 \le x \le 1$

$-2x+5 \quad x<-2$



$y=k \Rightarrow k=-3$

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الف)

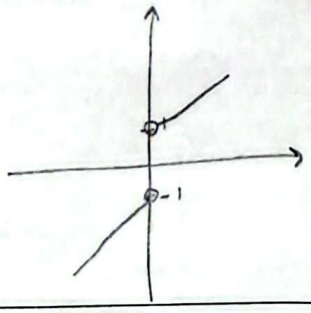
$y = x + \frac{x}{|x|}$

$x>0 \to x+1$

$x<0 \to x-1$

$x \neq 0$

$R = \mathbb{R} - [-1,1]$



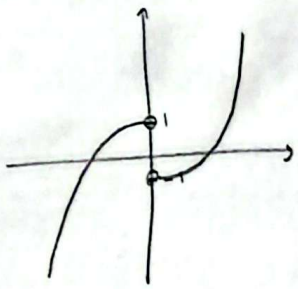
ب)

$y = x|x| - \frac{x}{|x|}$

$x>0 \to x^2-1$

$x<0 \to -x^2+1$

$R = \mathbb{R}$



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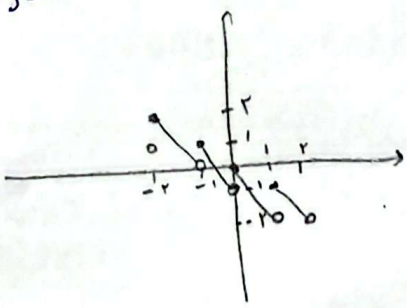
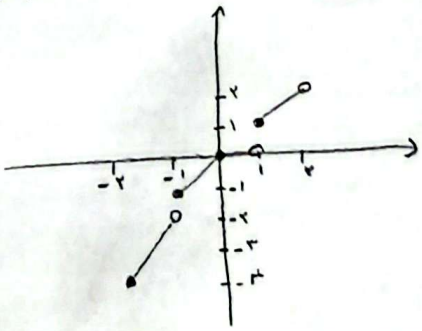
الف) $y = [x] - 2x$



ب) $y = [x] \cdot |x|$



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الف) $y = 2x - [3x]$

$0 \le 2x - [3x] < 1 \qquad R=[0,1)$

ب) $y = 6x - 6[x] = 6(x-[x])$

$0 \le 6(x-[x]) < 6 \to R=[0,6)$

ج) $y = x - 5\left[\frac{x}{5}\right] \div 5 \quad \frac{y}{5} = \frac{x}{5} - \left[\frac{x}{5}\right]$

$0 \le \frac{x}{5} - \left[\frac{x}{5}\right] < 1 \to \frac{y}{5} = [0,1) \xrightarrow{\times 5} y=[0,5)$

$R=[0,5)$

د) $y = [2x] - 2x \xrightarrow{\times -1} -y = 2x - [2x]$

$R=(-1,0]$

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الف	ب	
الف) $y = 3\sin x + 2\cos x$ $-\sqrt{9+4} \leq 3\sin x + 2\cos x \leq \sqrt{9+4}$ $-\sqrt{13}$ $\quad$ $\sqrt{13}$ $R: [-\sqrt{13}, \sqrt{13}]$	ب) $y = 4\sin x - 3\cos x$ $-\sqrt{16+9} \leq 4\sin x - 3\cos x \leq \sqrt{16+9}$ $-5 \quad 5$ $R = [-5, 5]$	۶
ج) $y = [2\sin x + 5\cos x]$ $-\sqrt{29} \leq 2\sin x + 5\cos x \leq \sqrt{29}$ $R = \{-6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5\}$	د) $y = \sqrt{\cos x - 2\sin x}$ $-\sqrt{5} \leq \cos x - 2\sin x \leq \sqrt{5}$ $R = \sqrt{[-\sqrt{5}, \sqrt{5}]} = [0, \sqrt[4]{5}]$	۱,۷۵
الف) $y = \sin^2 x + 3\sin x + 2$ $\sin x = \frac{-b}{2a} = -\frac{3}{2}$ ✗ $\sin x = 1 \longrightarrow y = 6$ $\sin x = -1 \longrightarrow y = 0$ $R = [0, 6]$	ب) $2\sin^2 x + 3\sin x + 2$ $\frac{-b}{2a} = -\frac{3}{4} \longrightarrow y = \frac{7}{8}$ $\sin x = 1 \longrightarrow y = 7$ $\sin x = -1 \longrightarrow y = 1$ $R = [\frac{7}{8}, 7]$	۲ ۷
الف) $y = \sin^2 x + 4\cos^2 x$ $1 - \cos^2 x + 4\cos^2 x = 1 + \underbrace{3\cos^2 x}_{[0, 3]} \longrightarrow [1, 4] = R$	ب) $y = \frac{2\cot x}{1+\cot^2 x} = \frac{\frac{2\cos x}{\sin x}}{\frac{1}{\sin^2 x}} = 2\cos x \sin x$ $= \sin 2x$ $R = [-1, 1]$	۸ ۲
الف) $y = \sin^4 x + \cos^4 x$ $2^{1-4} \leq \sin^4 x + \cos^4 x \leq 1$ $2^{-2} \leq \quad \text{〃} \quad \leq 1$ $R = [\frac{1}{4}, +1]$	ب) $y = [\sin^8 x + \cos^8 x]$ $2^{1-8} \leq \sin^8 x + \cos^8 x \leq 1$ $\longrightarrow R: [\frac{1}{8}, 1] \xrightarrow{\text{براکت}} \{0, 1\}$ $R_{\text{کل}} = \{0, 1\}$	۲ ۹
الف) $y = \frac{2x^2 + 7x - 4}{x + 4} = \frac{(2x-1)(x+4)}{(x+4)}$ $R = \mathbb{R} - \{-9\}$	ب) $y = \frac{x^3 - 1}{x - 1} = \frac{(x-1)(x^2 - x + 1)}{(x-1)}$ $x^2 - x + 1 \longrightarrow \frac{1}{2} = -\frac{b}{2a}$, $\frac{3}{4}$ $R = [\frac{3}{4}, +\infty) - \{1\}$ (۱ خط خورده)	۱,۷۵ ۱۰