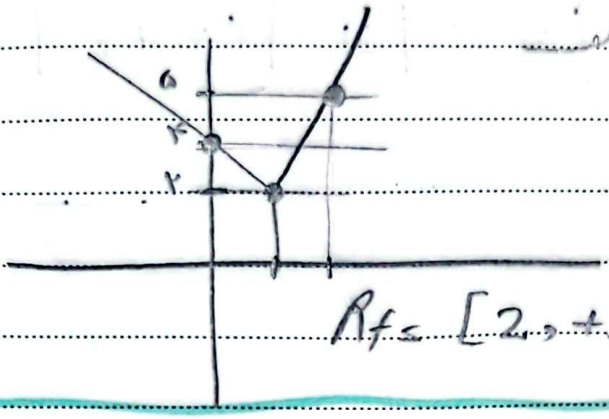
Year: یازدهم Month: تکالیف Dey : 7 ( ) ۱۸٫۵ Subject: آزاد ادبی نژاد

۱) الف)

$y = x + |2x - 4|$

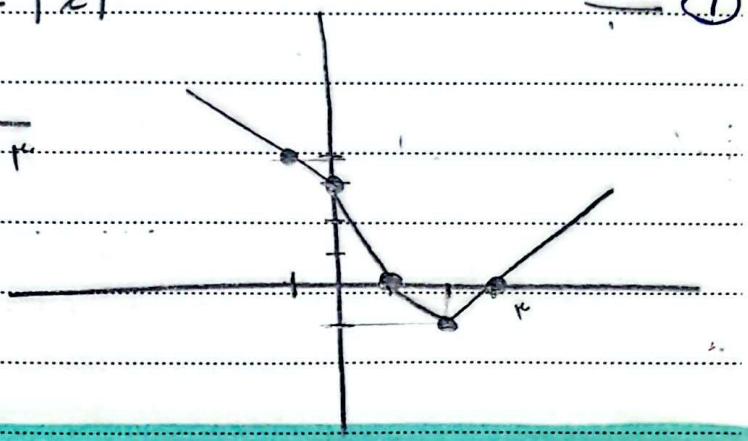
x	2	
$2 - x$		$2x - 4$



$Rf = [2, +\infty)$ ۵

۱) $y = |x - 2| + |x - 1| - |x|$

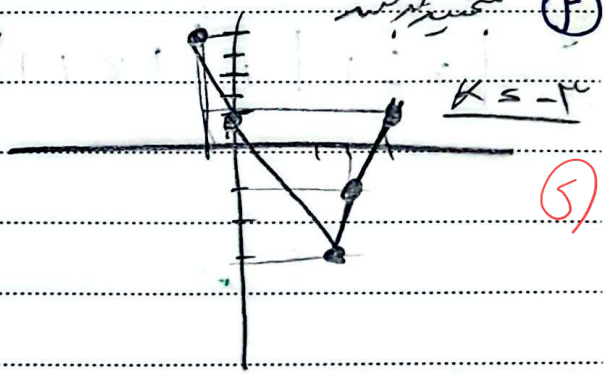
x	0	1	2	
$-x + 2$				
$-2x + 2$				
$-x + 1$				
$x - 2$				
x	0	-1		



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

۲) $|2\sqrt{x} - 2| - |\sqrt{x} + 2| = K$

x	-2	1	
$-2x + 1$			
$-4x + 1$			
$-2x - 1$			



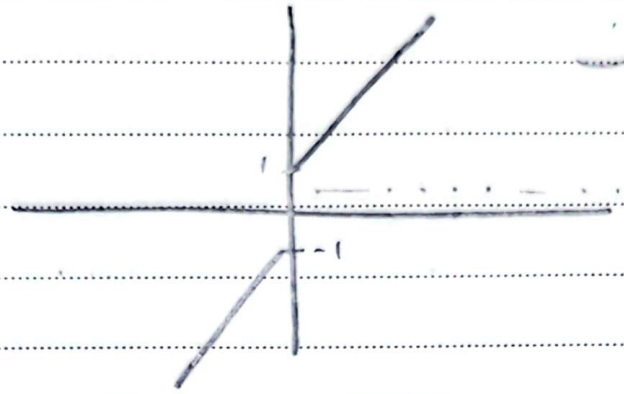
$K \leq -3$ ۵

Year: ____ Month: ____ Dey : ____ ( ) Subject: ____

(۲) الف

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

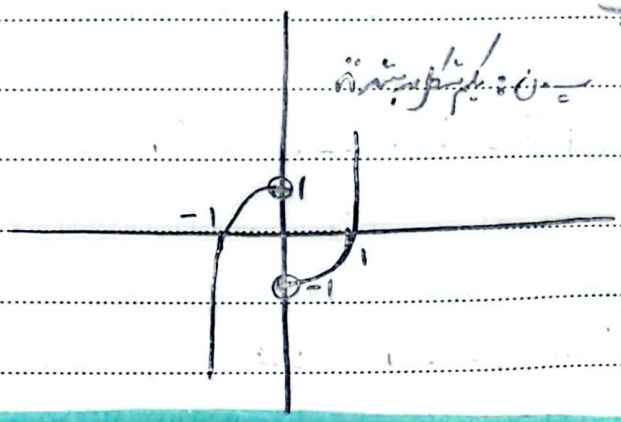
$$\begin{cases} x>0 & x+1 \\ x<0 & x-1 \\ 0 & \text{ت.ن} \end{cases}$$



(۳) ب

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

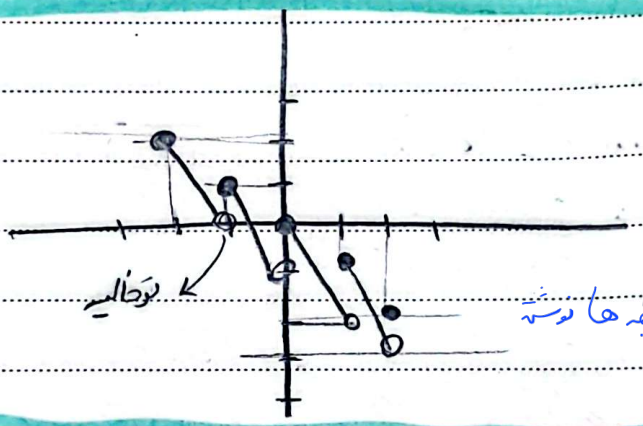
$$\begin{cases} x>0 & x^2-1 \\ x<0 & x^2+1 \\ 0 & \text{ت.ن} \end{cases}$$



(۴) الف

$$y = [x] - 2x$$

$$-2 < x \leq 2$$

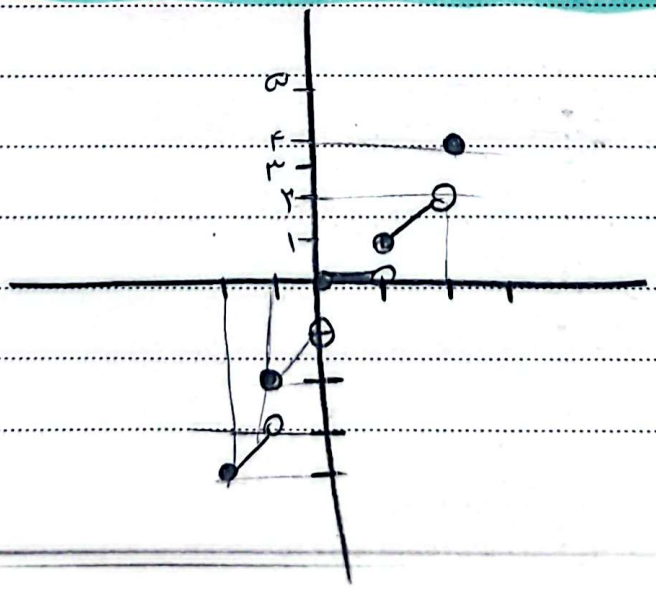


بهتر است ضابطه ها نوشته شود

(۴) ب

$$y = [x]|x|$$

$$[-2, 2]$$



Year: ______ Month: ______ Dey : ____ ( ) Subject: ______

۵) الف) $y = ۳x - [۳x] \xrightarrow{\text{شبیه}} x - [x] \to R_f = [۰, ۱)$ ✓

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۵) ب) $y = ۴x - ۴[x] \to ۴\underbrace{(x - [x])}_{R = [۰, ۱)} \to R_f = [۰, ۴)$

---

۵) ج) $y = x - ۵\left[\frac{x}{۵}\right] \to ۵\underbrace{\left(\frac{x}{۵} - \left[\frac{x}{۵}\right]\right)}_{[۰, ۱)} \to R_f = [۰, ۵)$

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۵) د) $y = [۲x] - ۲x \to -\underbrace{(۲x - [۲x])}_{[۰, ۱)} \to (-۱, ۰]$

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۶) الف) $y = ۳\sin x + ۲\cos x \to -\sqrt{۱۳} \leq ۳\sin x + ۲\cos x \leq \sqrt{۱۳}$ ✓

$R_f = [-\sqrt{۱۳}, \sqrt{۱۳}]$

---

۶) ب) $y = ۴\sin x - ۳\cos x \to -\sqrt{۱۶+۹} \leq ۴\sin x - ۳\cos x \leq \sqrt{۱۶+۹}$

$R_f = [-۵, +۵]$

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۶) ج) $y = [۲\sin x + ۵\cos x] \to -\sqrt{۲۹} \leq ۲\sin x + ۵\cos x \leq \sqrt{۲۹}$

$-۶ \leq [۲\sin x + ۵\cos x] \leq ۵ \to R_f = \{-۶, -۵, -۴, -۳, -۲, -۱, ۰, ۱, ۲, ۳, ۴, ۵\}$

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۶) د) $y = \sqrt{\cos x - ۲\sin x} \to -\sqrt{۵} \leq \cos x - ۲\sin x \leq \sqrt{۵}$

$۰ \leq \sqrt{\cos x - ۲\sin x} \leq \sqrt{\sqrt{۵}} \to R_f = [۰, \sqrt[۴]{۵}]$

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۷) الف) $y = \sin^۲ x + ۳\sin x + ۲ \to ۱ \Rightarrow ۶$

$-۱ \Rightarrow ۰$

رأس $\left(\frac{-۳}{۲}\right) \Rightarrow \frac{-۱}{۴}$.

$R_f = [\frac{-۱}{۴}, ۶]$ ۰

۱٫۵

SAMA NOTEBOOK

(7) ب
$y = 2\sin^2 x + 3\sin x + 2 \longrightarrow 1 \to 7$

$-1 \to 1$

$\frac{-3}{4} \to \frac{7}{8}$ $\quad R_f = [\frac{7}{8}, 7]$

(8) الف
$y = \sin^2 x + 4\cos^2 x \quad 1 + 3\cos^2 x \Longrightarrow 0 \le \cos^2 \le 1$

$= 1 - \cos^2 x$ (د)

$0 \le 3\cos^2 \le 3 \longrightarrow 1 \le 1 + 3\cos^2 x \le 4 \quad R_f = [1, 4]$

(8) ب
$y = \frac{2\cot x}{1+\cot^2 x} = \frac{\frac{2\cos}{\sin}}{\frac{\cos^2+\sin^2}{\sin^2}} = 2\sin\cos$

$y = 2\sin x\cos x = \sin 2x \longrightarrow -1 \le \sin x \le 1$

$\longrightarrow -1 \le \sin 2x \le 1 \longrightarrow R_f = [-1, 1]$

(9) الف
$y = \sin^6 x + \cos^6 x \qquad \frac{1}{4} \le \sin^6 x + \cos^6 x \le 1$ ($1-3$, 2×3)

$R_f = [\frac{1}{4}, 1]$ (د)

(9) ب
$y = [\sin^8 x + \cos^8 x] \longrightarrow \frac{1}{8} \le \sin^8 x + \cos^8 x \le 1$ ($1-4$, 1×4)

$R_f = \{0, 1\}$

(10) الف
$y = \frac{x^2+7x-8}{x+4} = \frac{(x+8)(x-1)}{x+4}$ $\quad (2x-1)$ (1)

$x \ne -4 \quad y \ne \frac{-9}{2} \qquad 2y+1 = 2x \quad x = \frac{2y+1}{2} \longrightarrow$

$R_f = \mathbb{R} - \{\frac{-9}{2}\}$ $\quad -9$

(10) ب
$y = \frac{(x-1)(x^2+1+x)}{(x-1)} \quad x \ne 1 \quad y \ne 3$

$y = x^2+x+1 \to \min_x = \frac{-1}{2} \qquad \min_y = \frac{3}{4}$

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