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

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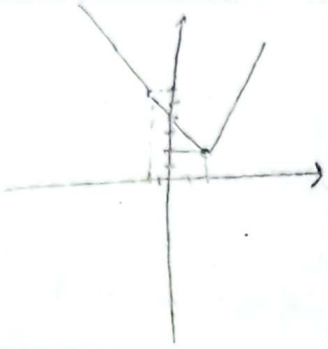
الف) $y = x + |2x-4|$

$2x-4 \quad x \geq 2$

$-2x+4 \quad x < 2$

$R = [2, +\infty)$



ب) $y = |x-2| + |x-1| - |x|$

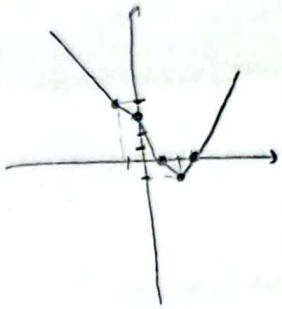
$x=2 \to y=0$

$x=1 \to y=0$

$x=0 \to y=3$

$x=-1 \to y=4$

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



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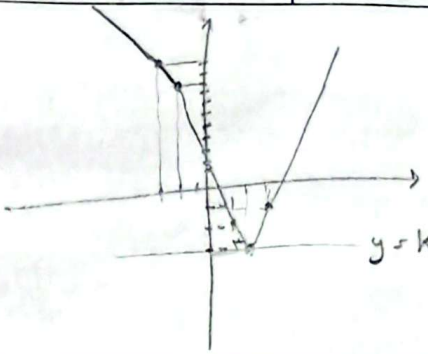
$|3x-3| - |x+2| = k$

$2x-5 \quad x \geq 1$

$-4x+1 \quad -2 \leq x < 1$

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



$y = k \Rightarrow k = -3$

۳

الف)

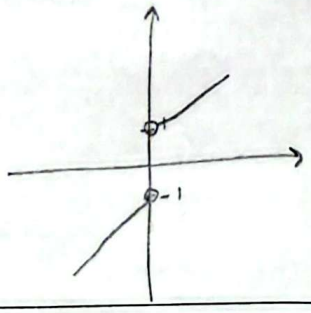
$y = x + \frac{x}{|x|}$

$x > 0 \to x+1$

$x < 0 \to x-1$

$x \neq 0$

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



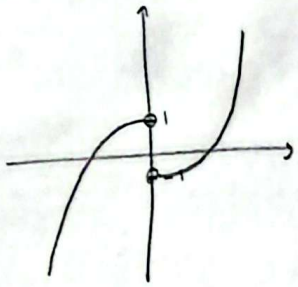
ب)

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

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

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

$R = \mathbb{R}$



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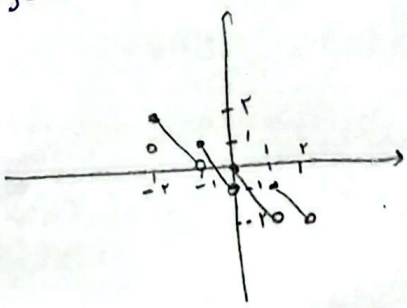
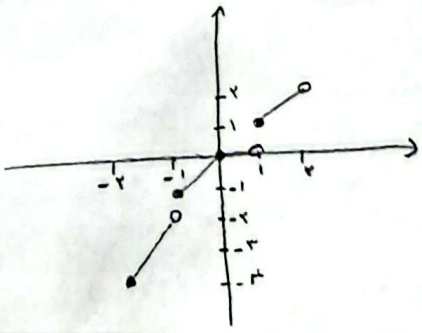
الف) $y = [x] - 2x$



ب) $y = [x] \cdot |x|$



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الف) $y = 2x - [3x]$

$0 \leq 2x - [3x] < 1 \quad R = [0, 1)$

ب) $y = 4x - 4[x] = 4(x - [x])$

$0 \leq 4(x-[x]) < 4 \to R = [0, 4)$

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

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

$R = [0, 5)$

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

$R = (-1, 0]$

الف) $y = 3\sin x + 2\cos x$

$-\sqrt{9+4} \leq 3\sin x + 2\cos x \leq \sqrt{9+4}$

$-\sqrt{13} \qquad \sqrt{13}$

$R : [-\sqrt{13}, \sqrt{13}]$

ب) $y = 4\sin x - 3\cos x$

$-\sqrt{16+9} \leq 4\sin x - 3\cos x \leq \sqrt{16+9}$

$-5 \qquad 5$

$R = [-5, 5]$ ۶

۲) $y = [2\sin x + 4\cos x]$

$-\sqrt{4+16} \leq 2\sin x + 4\cos x \leq \sqrt{4+16}$

$R = \{-4, -3, -2, -1, 0, 1, 2, 3, 4\}$

د) $y = \sqrt{\cos x - 2\sin x}$

$-\sqrt{5} \leq \cos x - 2\sin x \leq \sqrt{5}$

$R = \sqrt{[-\sqrt{5}, \sqrt{5}]} = [0, \sqrt{5}]$

الف) $y = \sin^2 x + 2\sin x + 2$

$\sin x = \frac{-b}{2a} = -\frac{2}{2} \times$

$\sin x = 1 \longrightarrow y = 4$

$\sin x = -1 \longrightarrow y = 0$

$R = [0, 4]$

ب) $2\sin^2 x + 3\sin x + 2$

$\frac{-b}{2a} = -\frac{3}{4} \longrightarrow y = \frac{7}{8}$ ۰

$\sin x = 1 \longrightarrow y = 7$ ۷

$\sin x = -1 \longrightarrow y = 1$

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

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

$= \sin 2x$

$R = [-1, 1]$ ۸

الف) $y = \sin^4 x + \cos^4 x$

$2^{1-2} \leq \sin^4 x + \cos^4 x \leq 1$

$2^{-2} \leq \qquad // \qquad \leq 1$

$R = [\frac{1}{4}, 1]$

ب) $y = [\sin^8 x + \cos^8 x]$

$2^{1-4} \leq \sin^8 x + \cos^8 x \leq 1$ ۹

$\longrightarrow R = [\frac{1}{8}, 1] \xrightarrow{\text{برابر}} \{0, 1\}$

$R_{[y]} = \{0, 1\}$

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

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

ب) $y = \frac{x^2 - 1}{x - 1}$ ، $\frac{(x-1)(x^2 - x + 1)}{(x-1)}$

$x^2 - x + 1 \longrightarrow \left| \begin{array}{l} \frac{1}{2} = -\frac{b}{2a} \\ \frac{3}{4} \end{array} \right.$ ۱۰

$R = [\frac{3}{4}, +\infty) - \{1\}$