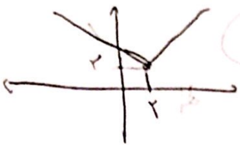
نام و نام خانوادگی ......[illegible]...... پاسخنامه تشریحی تکلیف شماره .... کلاس ....

۱

$y = x + |2x-4| \rightarrow \frac{2}{x+4-2x \mid x+2x-4}$

$-x+4 \quad 3x-4$

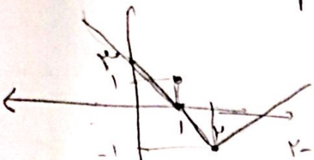


$\rightarrow R_f = [2, +\infty)$

$-x+1$

$y = |x-2| + |x-1| - |x|$

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

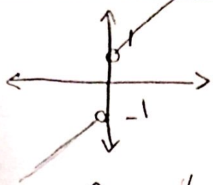


$-3x+3$

$-x+3$	$1-x+$ $2-x-x$	$2x+$ $x-1$ $-x$	$3x-3-x$ $x-3$
$2-x+1-x$			

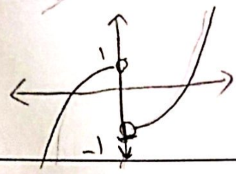
۲

$y = x + \frac{x}{|x|} \rightarrow \begin{cases} x+1 & x>0 \\ x-1 & x<0 \end{cases} \quad x \neq 0$



سؤال ۲ ردیف ۳ جا به جا نوشته شده.

$y = x|x| - \frac{x}{|x|} \rightarrow \begin{cases} +x^2-1 & x>0 \\ -x^2+1 & x<0 \end{cases}$



۳

$|3x-3| - |x+2| = k \rightarrow \boxed{k=-3}$

$-2 \qquad 1$

$3-3x+x-2 \rightarrow -2x+1$

$3-3x-x-2 \rightarrow \boxed{-4x+1}$

$3x-3-x-2 \rightarrow \boxed{2x-5}$

۴

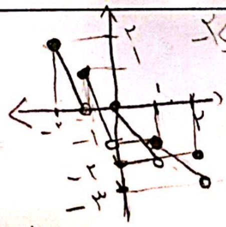
$y = [x] - 2x$

$-1 \le x < 0 \rightarrow -1-2x$

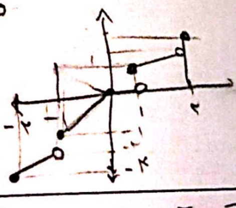
$0 \le x < 1 \rightarrow 1-2x$

$-2 \le x < -1 \quad -2-2x$

$[-2, 2)$



$y = [x]|x| \rightarrow \begin{cases} x=2 \\ 1 \le x < 2 \\ 0 \le x < 1 \\ -|x| \;\; -2|x| \end{cases}$



۵

(۱) $3x - [3x] \rightarrow 0 \le x-[x] < 1 \rightarrow 0 \le 3x - [3x] < 1 \rightarrow R_f = [0,1)$

(۲) $4x - 4[x] \rightarrow 0 \le x - [x] < 1 \xrightarrow{\times 4} 0 \le 4x - 4[x] < 4 \rightarrow R_f = [0,4)$

(۳) $x - 5\left[\frac{x}{5}\right] \rightarrow 0 \le \frac{x}{5} - \left[\frac{x}{5}\right] < 1 \xrightarrow{\times 5} 0 \le x - 5\left[\frac{x}{5}\right] < 5 \rightarrow [0,5)$

(۴) $[2x] - 2x \rightarrow 0 \le 2x - [2x] < 1 \rightarrow -1 < [2x] - 2x \le 0 \rightarrow (-1, 0]$

$y = 12\sin x + 5\cos x \rightarrow -\sqrt{169} \le 12\sin x + 5\cos x \le \sqrt{169} \rightarrow [-\sqrt{169}, \sqrt{169}]$

$y = 4\sin x - 3\cos x \rightarrow -\sqrt{25} \le 4\sin x - 3\cos x \le \sqrt{25} \rightarrow [-5, 5]$

$y = [3\sin x + 4\cos x] \rightarrow -\sqrt{49} \le 3\sin x + 4\cos x \le \sqrt{49} \rightarrow$

$y = \sqrt{\cos x - 2\sin y} \rightarrow -\sqrt{5} \le \cos x - 2\sin y \le \sqrt{5} \rightarrow [0, \sqrt{5}]$

۶

(1) $y = \sin^2 x + 3\sin x + 2$

$(\sin x + 1)(\sin x + 2) \rightarrow \sin x = -1$ ✓

$\sin x = -2$

$\rightarrow R_f = 0$

$y = 2\sin^2 x + 3\sin x + 2$

$-\frac{b}{2a} = \frac{-3}{4} \rightarrow [\frac{3}{8}]$

$\sin x = 1 \rightarrow 9$ max

$[-\frac{1}{8}, 9]$

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$y = \sin^2 x + \cos^2 x + 3\cos^2 x \rightarrow -1 \le \cos x \le 1$

$\rightarrow 0 \le \cos^2 x \le 1$

$\rightarrow 0 \le 3\cos^2 x \le 3 \xrightarrow{+1} 1 \le 3\cos^2 x + 1 \le 4$

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

$2\frac{\cos x}{\sin x} \cdot \sin^2 x \rightarrow 2\cos x \cdot \sin x \rightarrow \sin 2x \rightarrow 0, +1, -1$

$[-2, 2]$

۹

$y = \sin^4 x + \cos^4 x \rightarrow (\sin^2 + \cos^2)^2 - 2\sin^2\cos^2$

$\sin^4 + \cos^4 - \sin^2\cos^2$

$(\sin^2 + \cos^2)^2 - 3\sin^2\cos^2 = 0 \rightarrow (1)$

$\rightarrow 1 - \frac{3}{4} \rightarrow \frac{1}{4}$

$R_f = [\frac{1}{2}, 1]$

$y = (\sin^4 x + \cos^4 x) \rightarrow (\sin^2 x + \cos^2 x)^2 - 2\sin^2 x\cos^2 x$

$\rightarrow 1 - \frac{1}{2}\sin^2 2x \rightarrow 1, \frac{1}{2}$

$[0, 2]$

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$y = \frac{x^2 + 8x - 3}{x + 3} \rightarrow \frac{(x+3)(x-1)}{(x+3)}$

$\mathbb{R} - \{-3\}$

$y = \frac{x^3 - 1}{x - 1} \rightarrow (x^2 + x + 1)$

$R_f = [1, +\infty) - \{3\}$

$\frac{\cos}{\sin^2}$