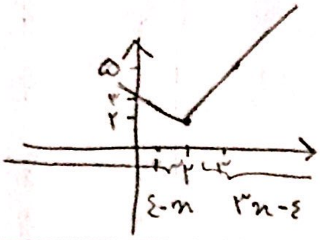
19,75

نام و نام خانوادگی .... پاسخنامه تشریحی تکلیف شماره ...۷... کلاس ....

۱

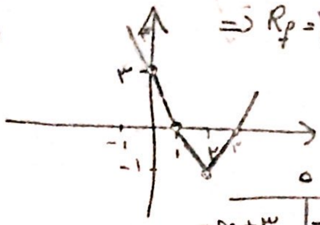
الف) $y = x + |2x-4|$
- $x > 2 \Rightarrow 3x-4$
- $x < 2 \Rightarrow 4-x$
- $x = 2 \Rightarrow 2$



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

ب) $y = |x-2| + |x-1| - |x|$

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



	0	1	2	
$-x+3$	$-3x+3$	$1-x$	$x-3$	

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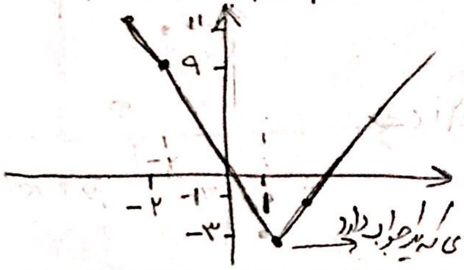
$|3x-3| - |x+2| = K \Rightarrow$

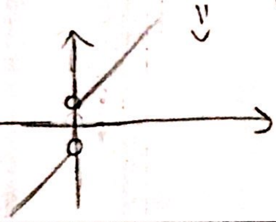


	-2	1
$-2x+5$	$-4x+1$	$2x-5$

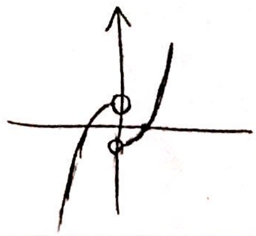
تنها نقطه‌ای که یک جواب دارد $\Rightarrow$ $K = -3$

۳

الف) $y = x + \frac{x}{|x|}$
- $x > 0 \Rightarrow x+1$
- $x < 0 \Rightarrow x-1$
- $x \neq 0$



ب) $y = x|x| - \frac{x}{|x|}$
- $x > 0 \Rightarrow x^2 - 1$
- $x < 0 \Rightarrow -x^2 + 1$

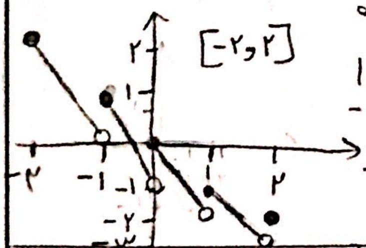


۴

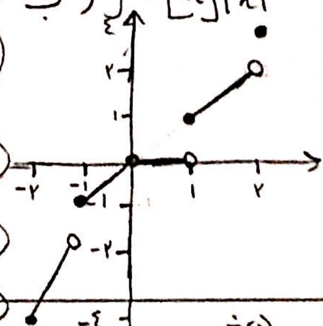
الف) $y = [x] - 2x$

$[-2, 2]$

- $0 \leq x < 1 \Rightarrow -2x$
- $1 \leq x < 2 \Rightarrow 1-2x$
- $-1 \leq x < 0 \Rightarrow -1-2x = 0$
- $-2 \leq x < -1 \Rightarrow -2-2x$
- if $\Rightarrow x = 2 \Rightarrow 2-4 = -2$



ب) $y = [x]|x|$
- $0 \leq x < 1 \Rightarrow 0$
- $1 \leq x < 2 \Rightarrow x$
- $x = 2 \Rightarrow 4$
- $-1 \leq x < 0 \Rightarrow x$
- $-2 \leq x < -1 \Rightarrow 2x$



۵

الف) $y = 3x - [3x]$

$0 \leq a - [a] < 1$

$\Downarrow$

$0 \leq 3x - [3x] < 1$

$R_f = [0, 1)$

ب) $y = 4x - 4[x]$

$\Downarrow$

$y = 4(x - [x])$

$\Downarrow$

$0 \leq 4(x-[x]) < 4$

$\Downarrow$

$R_f = [0, 4)$

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

$0 \leq \frac{x}{5} - \left[\frac{x}{5}\right] < 1$

$\times 5 \Downarrow$

$0 \leq x - 5\left[\frac{x}{5}\right] < 5 \Rightarrow R_f = [0, 5)$

د) $y = [2x] - 2x \Rightarrow -1 < [a] - a \leq 0 \Rightarrow -1 < [2x] - 2x \leq 0 \Rightarrow (-1, 0]$

الف) $y = 3\sin x + 4\cos x$

$-\sqrt{13} \le 3\sin x + 4\cos x \le \sqrt{13}$

$R_f = [-\sqrt{13}, \sqrt{13}]$

ب) $y = 5\sin x - 12\cos x$

$-\sqrt{169} \le 5\sin x + (-12\cos x) \le \sqrt{169}$

$R_f = [-13, 13]$

ج) $y = [3\sin x + 4\cos x]$

$-5 \le 3\sin x + 4\cos x \le 5$

$R_f = \{-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5\}$

د) $y = \sqrt{5\cos x - 2\sin x}$

$-\sqrt{29} \le 5\cos x - 2\sin x \le \sqrt{29} \Rightarrow R_f = [0, \sqrt{29}]$

(5)

الف) $y = \sin^2 x + 2\sin x + 2$

$\sin x$ → $1 \Rightarrow y = 5$, $-1 \Rightarrow y = 1$, $\frac{-b}{2a} = \frac{-2}{2} \in$

$-1 \le \sin x \le 1$

$\Rightarrow R_f = [1, 5]$

ب) $y = 2\sin^2 x + 2\sin x + 2$

$\sin x$ → $1 \Rightarrow y = 6$, $-1 \Rightarrow y = 2$, $\frac{-b}{2a} = \frac{-2}{4} \in$ ، $y = \frac{5}{2}$

$\Rightarrow R_f = [\frac{5}{2}, 6]$

(7)

الف) $\sin^2 x + 3\cos^2 x$

$\sin^2 x = 1 - \cos^2 x \Rightarrow y = 2\cos^2 x + 1$

$\cos^2 x = 0 \Rightarrow y = 1$

$\cos^2 x = 1 \Rightarrow y = 3$

$R_f = [1, 3]$

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

$\Rightarrow y = \sin 2x$

$\Rightarrow R_f = [-1, 1]$

(8)

الف) $y = \sin^4 x + \cos^4 x$

$\frac{1-k}{2} \le \sin^{2k} x + \cos^{2k} x \le 1$

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

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

ب) $y = [\sin^8 x + \cos^8 x]$

$2^{-3} \le \sin^8 x + \cos^8 x < 1$

$[\frac{1}{8}, 1) \Rightarrow R_f = \{0, 1\}$

(5)

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الف) $y = \frac{2x^2 + 7x - 4}{x + 4}$, $x \ne -4$

$y = \frac{(x+4)(2x-1)}{(x+4)} = 2x - 1$

$2(-4) - 1 = -9$

$y = 2x - 1 \Rightarrow 2x = y + 1$

$\Rightarrow x = \frac{y+1}{2} \Rightarrow R_f = \mathbb{R} - \{-9\}$

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

$x \ne 1$

$y = x^2 + x + 1 \Rightarrow y_s = \frac{-\Delta}{4a} = \frac{-b^2 + 4ac}{4a}$

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

$x \ne 1 \Rightarrow y \ne 3 \Rightarrow R_f = [\frac{3}{4}, +\infty) - \{3\}$

(1,75)

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