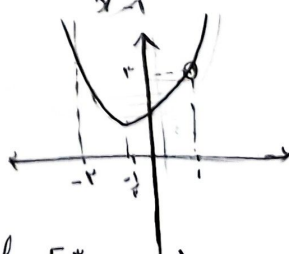


الف) $y = x + 2x - 4$ $\frac{0}{x+4-2x} \quad \frac{x+2x-4}{3x-4}$ if $\begin{cases} x \geq 2 \rightarrow 3x-4 \\ x < 2 \rightarrow -x+4 \end{cases}$ $R_f = [2, +\infty)$	ب) $y = x-2 + x-1 - x$ $\frac{0}{-x+3} \quad \frac{-x+2}{-x+1} \quad \frac{x-3}{x-3}$ if $\begin{cases} x \geq 2 \rightarrow x-3 \\ 1 \leq x < 2 \rightarrow -x+1 \\ 0 \leq x < 1 \rightarrow -x+3 \\ x < 0 \rightarrow -x+3 \end{cases}$ $R_f = [-1, +\infty)$	1
$y = 3x-3 - x+2 = k$ $\frac{-2}{-2x+5} \quad \frac{1}{-4x+1} \quad \frac{2x-5}{2x-5}$ if $\begin{cases} x \geq 1; 2x-5 \\ -2 \leq x < 1; -4x+1 \\ x < -2; -2x+5 \end{cases}$	* فقط از $k = -3$ مساوی یک جواب دارد $k = -3$	2
الف) $y = x + \frac{x}{ x }$ $\frac{0}{x-1} \quad \frac{x}{x+1}$ if $\begin{cases} x+1 \rightarrow x \geq 0 \\ x-1 \rightarrow x < 0 \end{cases}$	ب) $y = x x - \frac{x}{ x }$ $\frac{0}{-x^2+1} \quad \frac{x^2-1}{x^2-1}$ if $\begin{cases} x \geq 0 \rightarrow x^2-1 \\ x < 0 \rightarrow -x^2+1 \end{cases}$	3
الف) $y = [x] - 2x$	ب) $y = [x] x$ $\frac{0}{-[x]x} \quad \frac{[x]x}{[x]x}$	4
الف) $y = 3x - [3x]$ $0 \leq 3 - [3] < 1$ $R_f = [0, 1)$	ب) $4x - 4[x]$ $4(x - [x]) \Rightarrow$ $R_f = [0, 4)$	5
ب) $y = x - 5[\frac{x}{5}]$ $5(\frac{x}{5} - [\frac{x}{5}]) \Rightarrow$ $R_f = [0, 5)$	ب) $y = [2x] - 2x$ $(0 \leq 2x - [2x] < 1) \times -1$ $0 \geq [2x] - 2x > -1$ $R_f = (-1, 0]$	

$1) y = 3 \sin x + 4 \cos x$ $-\sqrt{9+16} \leq \frac{3 \sin x + 4 \cos x}{5} \leq \sqrt{9+16}$ $Rf = [-\sqrt{13}, \sqrt{13}]$	$2) y = 5 \sin x - 3 \cos x$ $-\sqrt{25+9} \leq 5 \sin x - 3 \cos x \leq \sqrt{25+9}$ $Rf = [-8, +8]$	$3) y = [2 \sin x + 8 \cos x]$ $-\sqrt{4+64} \leq 2 \sin x + 8 \cos x \leq \sqrt{4+64}$ $Rf' = [-\sqrt{68}, \sqrt{68}]$ $Rf = \{-4, -8, -5, -3, -1, 1, 3, 5, 8\}$	$4) y = \sqrt{\cos x - 2 \sin x}$ $-\sqrt{1+4} \leq -1 \leq -2 \sin x + \cos x \leq \sqrt{1+4}$ $Rf' = [-\sqrt{5}, \sqrt{5}]$ $Rf = [0, \sqrt{5}]$	
$1) y = \sin^2 x + 3 \sin x + 2$ $\sin = 1 \rightarrow y \rightarrow \max$ $\sin = -1 \rightarrow 0 \rightarrow \min$ $\sin = \frac{b}{ra} = \frac{-3}{2} \rightarrow \text{جذب}$ $Rf = [0, 4]$	$2) y = 2 \sin^2 x + 3 \sin x + 2$ $\sin = 1 \rightarrow y \rightarrow \max$ $\sin = -1 \rightarrow 1$ $\sin = \frac{b}{ra} = \frac{-3}{2} \rightarrow \frac{y}{\lambda} \rightarrow \min$ $Rf = [\frac{y}{\lambda}, y]$			V
$1) y = \sin^2 x + 2 \cos^2 x$ $\frac{\sin^2 x + \cos^2 x + \cos^2 x}{1} \Rightarrow Rf = [1, 2]$	$2) y = \frac{2 \cot x}{1 + \cot^2 x} = \frac{2 \cos x}{\frac{1}{\sin x}} = 2 \cos x \cdot \sin x$ $\frac{1}{\sin x \sin^2 x} \Rightarrow Rf = [-1, 1]$			A
$1) y = \sin^2 x + \cos^2 x$ $\frac{1-2}{2} \leq \sin^2 + \cos^2 \leq \frac{1+2}{2}$ $Rf = [\frac{1}{2}, 1]$	$2) y = [\sin^2 x + \cos^2 x]$ $\frac{1-2}{2} \leq \sin^2 x + \cos^2 x \leq 1$ $Rf = [\frac{1}{2}, 1] \rightarrow Rf = \{0, 1\}$			9
$1) y = \frac{2x^2 + 7x - 6}{x + 2} = \frac{(x+2)(x-1)}{x+2}$ $y = 2x - 1 \Rightarrow Rf = R - \{-9\}$ در دامنه	$2) y = \frac{x^2 - 1}{x - 1} = \frac{(x-1)(x+1)}{x-1}$ $y = x + 1 \rightarrow$ در دامنه $Rf = [\frac{3}{2}, +\infty)$			10