

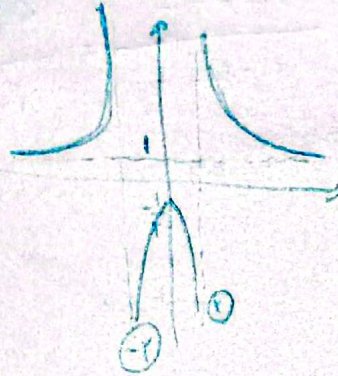
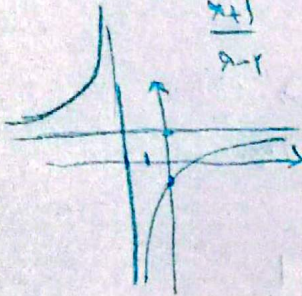
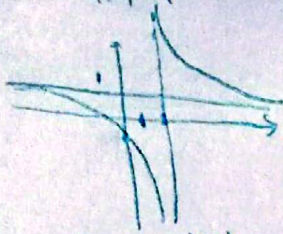
برای حل این مسئله

۱۹، ۷۵

نیز به نظر می آید

الف) $y = \frac{|x|+1}{|x|-2}$

$$\begin{array}{c|c} -x+1 & x+1 \\ \hline -x-2 & x-2 \end{array}$$



$R_f = (-\infty, -\frac{1}{2}] \cup (\frac{1}{2}, +\infty)$

ب) $y = \frac{x^2+1}{|x|}$

$$\begin{array}{c|c} x^2+1 & x^2+1 \\ \hline -x & x \end{array} \quad x > 0$$

$-\left(\frac{x^2+1}{x}\right) \quad [1, +\infty)$

$-\left(x + \frac{1}{x}\right)$

$R_f = [1, +\infty)$

$\begin{cases} x < 0 \\ (-\infty, -1] \end{cases} \rightarrow [1, +\infty)$

$x^2+2x-2 = yx+2y$

$x^2+(2-y)x-2-2y = 0$

$x = \frac{-2+y \pm \sqrt{\Delta}}{2}$

$y = \frac{x^2+2x-2}{x+2}$

$(2-y)^2 - 4 \times 1 \times (-2-2y) \geq 0$

$4+y^2-4y+8+8y$

$y^2+4y+12 \geq 0$

$(y+2)(y+6) \geq 0$

$$\begin{array}{c} -4 \quad -6 \\ + \quad - \quad + \end{array}$$

$R_f = (-\infty, -4] \cup [-6, +\infty)$

$$f(x) = \frac{x^2 - x + \frac{1}{\varepsilon}}{x^2 - x + 1} = \frac{(x^2 - x + \frac{1}{\varepsilon})}{(x^2 - x + 1) + \frac{1 - \varepsilon}{\varepsilon}} = \frac{a}{a + \frac{1 - \varepsilon}{\varepsilon}}$$

$$x^2 - x + 1 \neq 0$$

$$\Delta = (-1)^2 - 4 \times 1 = 1 - 4 = -3 < 0$$

$$D_f = \mathbb{R} \checkmark$$

max min
محدود

$$\max a \rightarrow +\infty$$

$$\min a =$$

$$\frac{+\infty}{+\infty + \frac{1 - \varepsilon}{\varepsilon}} = 1$$

$$x^2 - x + \frac{1}{\varepsilon} \rightarrow x_{\min} = \frac{1}{2}$$

$$y_{\min} = \frac{1}{\varepsilon} - \frac{1}{2} + \frac{1}{\varepsilon} = \frac{2}{\varepsilon} - \frac{1}{2}$$

$$R_f = [0, 1) \checkmark$$

$$\text{الف) } y = \sqrt{-x^2 + 8x - 1}$$

محدود

$$x_{\max} = \frac{-(-8)}{2 \times (-1)} = 4 \quad y_{\max} = \sqrt{-4^2 + 8 \times 4 - 1} = 3$$

$$R_f = (-\infty, 4] \xrightarrow{\text{محدود}}, [0, 3] \checkmark$$

$$\text{ب) } y = \sqrt{2x^2 - 14x}$$

$$x_{\min} = \frac{14}{2 \times 2} = \frac{7}{2}$$

$$R_f = [-14, +\infty)$$

$$y_{\min} = 14 - 14 = 0 \quad \therefore$$

$$\xrightarrow{\text{محدود}}, [-14, +\infty)$$

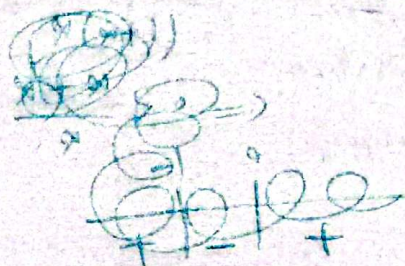
$$[-14, +\infty)$$

$\lim_{x \rightarrow \infty} y = \log \frac{(x^2 - x + 1)}{x^2} \rightarrow \log \frac{1}{x} \rightarrow \log (0, +\infty) = \mathbb{R}$

(2)

$y = \log \left(\frac{x+1}{x} \right)$

$R_f = \mathbb{R}$



$\frac{x+1}{x} > 0 \Rightarrow x > 0$

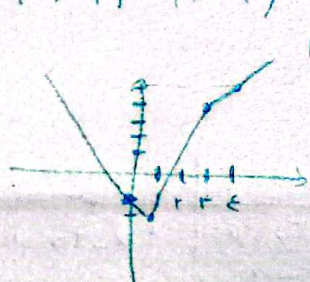
$R = [1, +\infty)$

$\log_y [1, +\infty) = [1, +\infty)$

$R_f = [1, +\infty)$

$|2x-2| - |x-2|$

(2) (2)

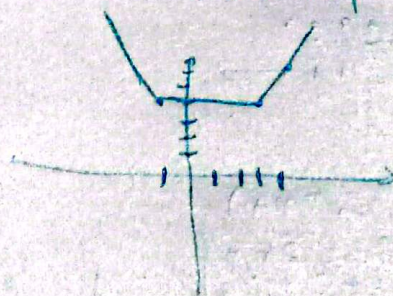


$-2x+2$	$x-2$	$x-2$
$2x-2$	$x-2$	$x-2$
$-x-1$	$x-2$	$x-2$

$= x+1$

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

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



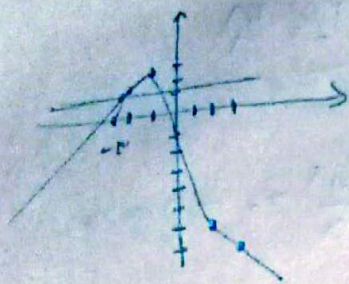
$-x+2$	$-x+2$	$x-2$
$-x-1$	$x+1$	$x+1$
$-x+2$	$x+1$	$x-2$

$= x+1$

$R_f = [1, +\infty)$

به نام خداوند دانشی

$$|x-2| + |2x+2| \leq 1$$



$-x+2$	$-x+2$	$x-2$
$+2x+2$	$-2x-2$	$-2x-2$
$= x+4$	$= -2x$	$= -x-4$

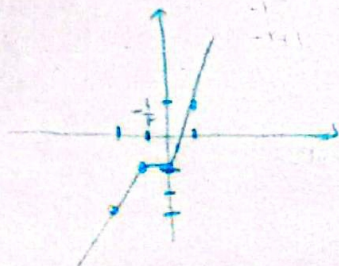
(۲)

$$R_f = (-\infty, 3]$$

$$-\frac{1}{2} \leq x \leq \frac{1}{2}$$

$$x \in (-\infty, -3] \cup [-\frac{1}{2}, +\infty)$$

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



$$\frac{1}{2} \rightarrow \frac{-1}{2} - 0 + \frac{1}{2} = -1$$

$-x-1+1 = -x$	$2x-2x-1 = -1$	$2x-2x-1+x = x-1$
$+2x+1$	$-x$	$2x-1$
$= x+1$	$= -1$	

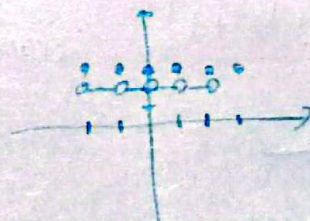
$$R_f = \mathbb{R}$$

(۲)

(۱)

$$y = [x] + [x-1] = [x] + [-x] + 1$$

$$x \in \mathbb{Z}$$



$$[-1, 0) \Rightarrow [x] = -1 \rightarrow 2x+1$$

$$[0, 1) \Rightarrow [x] = 0 \rightarrow 2x$$

$$[1, 2) \Rightarrow [x] = 1 \rightarrow 2x-1$$

$$[2, 3) \Rightarrow [x] = 2 \rightarrow 2x-2$$

$$[3, 4) \Rightarrow [x] = 3 \rightarrow 2x-3$$

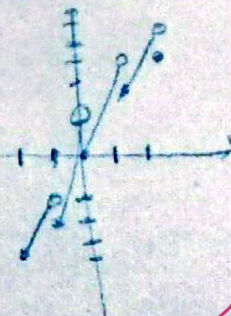
$$[-2, -1) \Rightarrow [x] = -2 \rightarrow 2x+2$$

$$R_f = \{1, 2\}$$

(۲)

(۹)

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



$$R_f = [-1, 1)$$

بناظره داده شده

(۲) (۱۰)

الف) $y = \sin^2 x - \sin x + 1$

$-1 = 1 + 1 + 1 = 3$

$1 = 1 - 1 + 1 = 1$

$\frac{1}{r} \cos \theta = \frac{1}{\frac{1}{2}} - \frac{\frac{1}{2}}{\frac{1}{2}} + 1 = \frac{3}{\frac{1}{2}}$

$R_f = [\frac{1}{2}, 3]$

ب) $y = \sin^2 x + \sin^2 x + 1$

$0 \Rightarrow 0 + 0 + 1 = 1$

$1 \Rightarrow 1 + 1 + 1 = 3$

$\frac{-1}{r} \cos \theta$

$R_f = [1, 3]$