

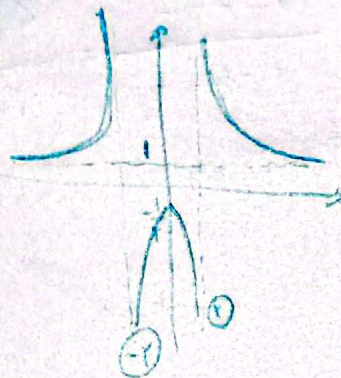
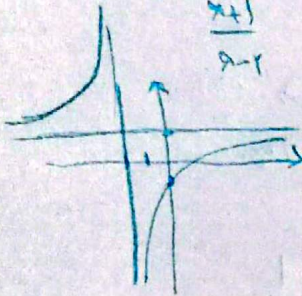
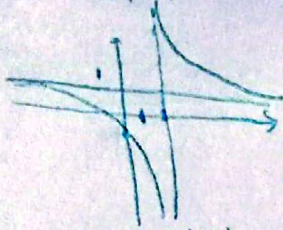
برای حل این مسئله

نیز به استرین

①

$$الف) y = \frac{|x|+1}{|x|-2}$$

$$\frac{-x+1}{-x-2} \quad \frac{x+1}{x-2}$$



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

$$ب) y = \frac{x^2+1}{|x|}$$

$$\frac{x^2+1}{-x} \quad \frac{x^2+1}{x} = x + \frac{1}{x} \quad x > 0$$

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

$$-\left(x + \frac{1}{x}\right) \quad \cup \quad R_f = [1, +\infty)$$

$$x^2 + 2x - 2 = yx + 1$$

$$y = \frac{x^2 + 2x - 2}{x + 1} \quad \text{②}$$

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

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

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

$$y^2 - 4y + 8 + 4y = y^2 + 8 \geq 0$$

$$y^2 + 8y + 12 \geq 0$$

$$(y+2)(y+4) \geq 0$$

$$\begin{array}{c} -4 \quad -2 \\ + \quad - \quad + \end{array}$$

$$R_f = (-\infty, -4]$$

$$\cup [-2, +\infty)$$

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

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

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

$$D_f = \mathbb{R}$$

max min
محدوده

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

$$\min a =$$

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

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

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

$$R_f = [0, 1)$$

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

محدوده

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

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

$$\text{ب) } y = \sqrt{2x^2 - 14x}$$

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

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

$$R_f = [7, +\infty)$$

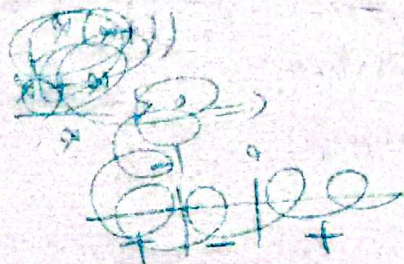
$$\xrightarrow{\text{محدوده}} [-2\sqrt{14}, +\infty)$$

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

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

$R_f: \mathbb{R}$

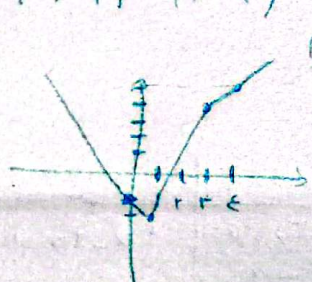
$x + \frac{1}{x}$
 $\hookrightarrow R = [1, +\infty)$
 $x > 1$



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

$\log_{1/2} [1, +\infty) = [1, +\infty) \quad R_f: [1, +\infty)$

4) $|2x-2| - |x-3|$

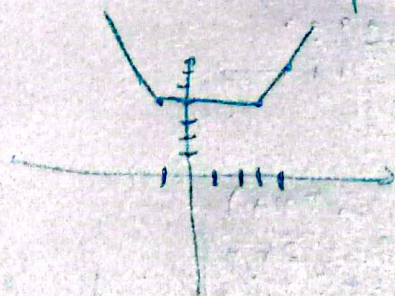


مشتق

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

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

5) $y = |x-3| + |x+1|$ مشتق

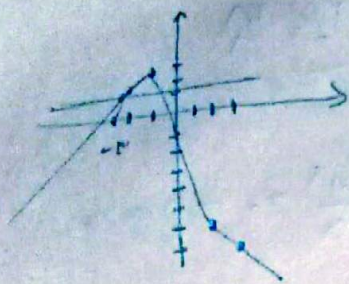


$-x+3$	$-x+3$	$x-3$
$-x-1$	$x+1$	$x+1$
$-2x+2$	$x-2$	$x-2$

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

به نام خداوند دانشی

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



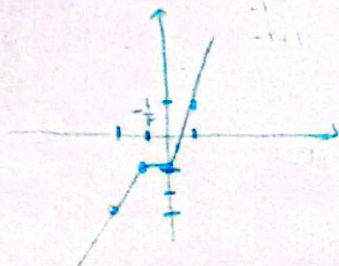
$-x+2$	$-x+2$	$x-2$
$+2x+2$	$-2x-2$	$-2x-2$
$= x+4$	$= -2x$	$= -x-4$

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

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

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

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



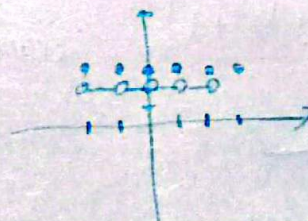
$$\frac{1}{2} \rightarrow \frac{-1}{2} - 0 + \frac{1}{2} = -1$$

$2x-1+1=2x$	$2x-2x-1=-1$	$2x-2x-1+1=0$
$+2x+1$	$-x$	$2x-1$
$= 4x+1$	$= -1$	

$$R_f = \mathbb{R}$$

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

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



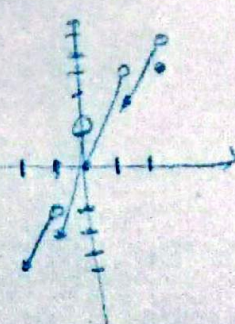
$$[-1, 0) = [x] = -1 \rightarrow 2x+1$$

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

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

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

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



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

بہ افکارہ دانش

(10)

الف) $y = \sin^2 x - \sin x + 1$

$$\begin{aligned} -1 &= 1 + 1 + 1 = 3 \\ 1 &= 1 - 1 + 1 = 1 \\ \frac{1}{r} \cos \theta &= \frac{1}{\frac{r}{2}} - \frac{r}{r} + 1 = \frac{3}{\frac{r}{2}} \end{aligned}$$

$$R_f = \left[\frac{r}{2}, 3 \right]$$

ب) $y = \sin^2 x + \sin^2 x + 1$

$$\begin{aligned} 0 &\Rightarrow 0 + 0 + 1 = 1 \\ 1 &\Rightarrow 1 + 1 + 1 = 3 \\ \frac{-1}{r} \cos \theta & \end{aligned}$$

$$R_f = [1, 3]$$