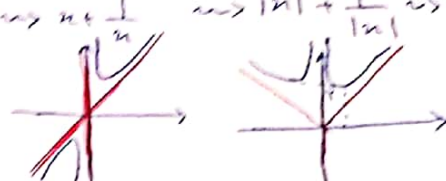


13) $y = \frac{|x|+1}{|x|-2}$ $\rightarrow$ $\lim_{x \rightarrow -\infty} \frac{|x|+1}{|x|-2} = 1$ $\rightarrow$ $\lim_{x \rightarrow +\infty} \frac{|x|+1}{|x|-2} = 1$ $\rightarrow$ $R = (-\infty, -\frac{1}{2}] \cup [\frac{1}{2}, +\infty)$ (2) -1

14) $y = \frac{x^2+1}{|x|} \rightarrow \begin{cases} \frac{x^2+1}{x} & x > 0 \\ \frac{x^2+1}{-x} & x < 0 \end{cases} \rightarrow y = \frac{|x|^2+1}{|x|} = |x| + \frac{1}{|x|} \rightarrow |x| + \frac{1}{|x|} \rightarrow R = [2, +\infty)$



15) $y = \frac{x^2+2x-2}{x^2-1} + \varepsilon - \varepsilon = \frac{x^2+2x+1}{x^2-1} - \varepsilon = \frac{(x+1)^2+1}{x^2-1} - \varepsilon = (x+1) + \frac{1}{(x+1)} - \varepsilon \rightarrow R = (-\infty, -2] \cup [2, +\infty)$ (2) -2

16) $f(x) = \frac{x^2-x+\frac{1}{2}}{x^2-x+1} \rightarrow \frac{1}{2} < f(x) < 1 \rightarrow$ if $(x^2-x) = \frac{1}{2} \rightarrow 0$ $\rightarrow$ $D = \mathbb{R}$ $\rightarrow$ $R = [0, 1]$ (2) -3

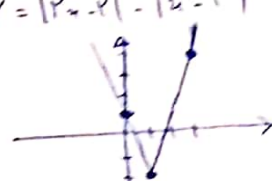
17) $y = \sqrt{-x^2+2x-1} \rightarrow -x^2+2x-1 \geq 0 \rightarrow x^2-2x+1 \leq 0 \rightarrow (x-1)^2 \leq 0 \rightarrow x=1 \rightarrow R = [0, 0]$ (2) -4

18) $y = \sqrt[3]{2x^2-12x} \rightarrow 2x^2-12x \geq 0 \rightarrow x^2-6x \geq 0 \rightarrow x(x-6) \geq 0 \rightarrow x \leq 0 \vee x \geq 6 \rightarrow R = (-\infty, 0] \cup [6, +\infty)$ (2) -5

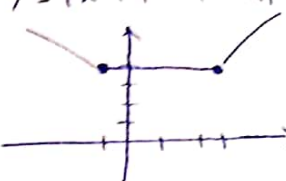
19) $y = \log(x^2-x+1)$ $x^2-x+1 > 0 \rightarrow R = \mathbb{R} \rightarrow y = \log(x^2-x+1) \rightarrow R = \mathbb{R}$ (2) -6

20) $y = \log\left(\frac{x^2+1}{x}\right) \rightarrow x + \frac{1}{x} \rightarrow R = (-\infty, -2] \cup [2, +\infty) \rightarrow y = \log\left(\frac{x^2+1}{x}\right) \rightarrow R = [1, +\infty)$ (2) -7

21) $y = |2x-2| - |2x-2| \rightarrow R = [-2, +\infty)$



22) $y = |x-2| + |x+1| \rightarrow R = [3, +\infty)$

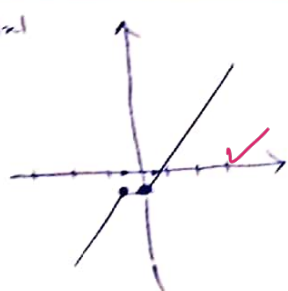


23) $|2x-2| - |2x+2| \leq 1$

$-x+2, x+2 \leq 1$ $x \leq -3$	$x-x-2x-2 \leq 1$ $-2x \leq 1 \rightarrow -\frac{1}{2} \leq x$	$x-x-2x-2 \leq 1$ $-2x-2 \leq 1 \rightarrow -2x \leq 3 \rightarrow -\frac{3}{2} \leq x$
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$\rightarrow (-\infty, -\frac{3}{2}] \cup [-\frac{1}{2}, +\infty)$ (2) -8

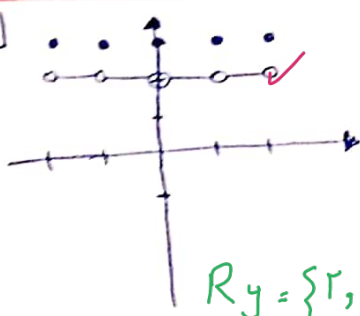
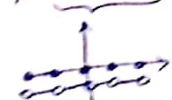
24) $y = 3x - (2x+1) + |2x|$



$R = \mathbb{R}$ (2) -9

25) $y = [x] + [x-2]$

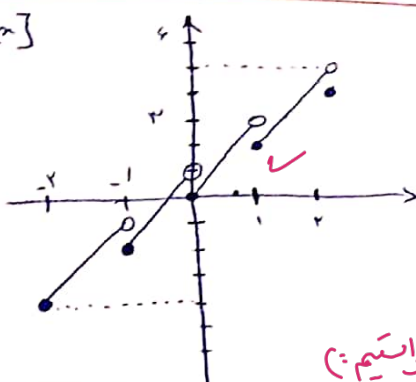
$y = [x] + [x-2] + 2$



$R_y = \{2, 3\}$

26) $y = 3x - [x]$

$R_y = [-1, 2)$



برد مرخواستیم

$$a) y = \sin^2 x - \sin x + 1$$

$$\begin{pmatrix} 1 \rightsquigarrow 1 \\ -1 \rightsquigarrow x \\ \frac{-b}{4a} = \frac{1}{4} \rightsquigarrow \frac{x}{4} \end{pmatrix}$$

$$R = \left[\frac{x}{4}, x \right] \checkmark$$

$$b) y = \sin^2 x + \sin x + 1$$

$$\begin{pmatrix} 1 \rightsquigarrow x \\ 0 \rightsquigarrow 1 \\ \frac{-b}{4a} = \frac{-1}{4} x \end{pmatrix}$$

$$R = [1, x] \checkmark$$

2) -10