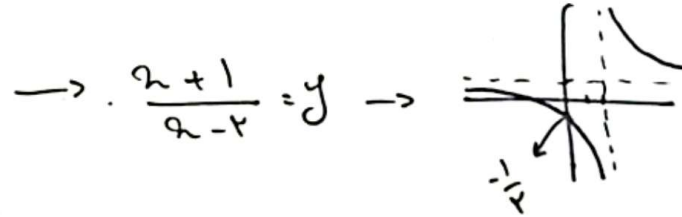


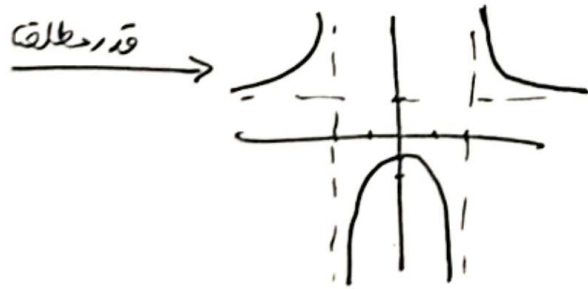
1A, 2A

پریا احسنی

دافع $y = \frac{|x|+1}{|x|-2}$



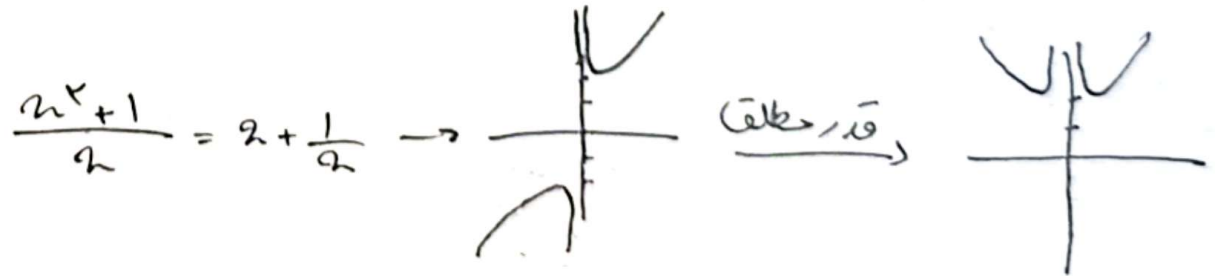
2



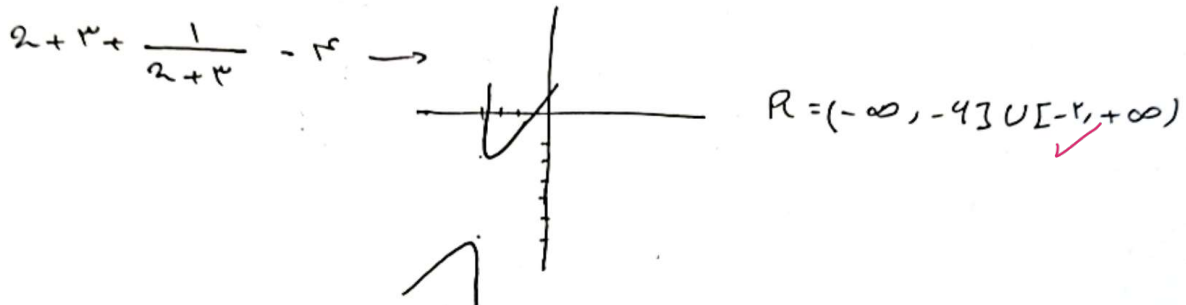
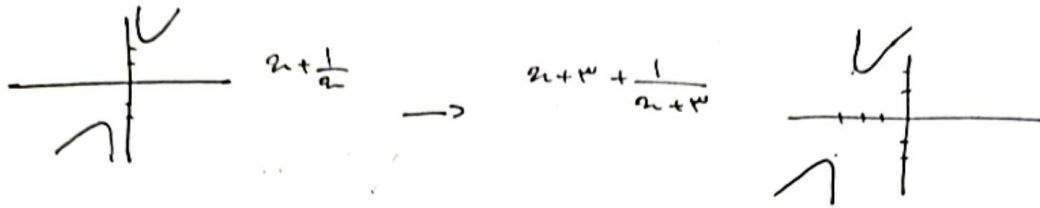
$R = (-\infty, -\frac{1}{2}] \cup (1, +\infty)$

$\rightarrow \frac{x^2+1}{|x|} = \frac{|x|^2+1}{|x|}$

$R = [2, +\infty)$



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



$$\frac{(2 - \frac{1}{x})^x}{2^x - 2x + 1} \rightarrow D = \mathbb{R}$$

$$\frac{2^x - 2x + \frac{1}{x}}{2^x - 2x + 1} \xrightarrow{2^x - 2x = t} \frac{t + \frac{1}{x}}{t + 1}$$

$$2^x - 2x \begin{cases} -\frac{b}{va} = \frac{1}{x} \\ y_{\min} = -\frac{1}{x} \end{cases}$$

$$\left(y = \frac{t + \frac{1}{x}}{t + 1} \right) \times (t + 1) \Rightarrow y(t + 1) = t + \frac{1}{x} \rightarrow$$

$$yt + y = t + \frac{1}{x} \rightarrow yt - t = \frac{1}{x} - y \rightarrow t(y - 1) = \frac{1 - xy}{x} \rightarrow t = \frac{1 - xy}{x(y - 1)}$$

$$t \geq -\frac{1}{x} \rightarrow \frac{1 - xy}{x(y - 1)} \geq -\frac{1}{x} \rightarrow \frac{1 - xy}{y - 1} \geq -1 \rightarrow \frac{1 - xy + y - 1}{y - 1} \geq 0 \rightarrow$$

$$\frac{-xy}{y - 1} \geq 0 \quad \frac{-1}{-1 + \frac{1}{x}} \quad R = [0, 1]$$

$$a) y = \sqrt{-2^x + \varepsilon 2x - 1} \rightarrow R \sqrt{f} = [0, \sqrt{\varepsilon}]$$

$$f \Rightarrow \begin{cases} 2_{\max} = \varepsilon \\ y_{\max} = \varepsilon \end{cases} Rf = (-\infty, \varepsilon]$$

$$b) y = \sqrt[3]{2^x - 2x} \rightarrow R \sqrt[3]{f} = [-\varepsilon, +\infty)$$

$$f \Rightarrow \begin{cases} 2_{\min} = \varepsilon \\ y_{\min} = -\varepsilon \end{cases} Rf = [\varepsilon, +\infty)$$

$\omega) y = \log \underbrace{(2^x - 2 + 1)}_f \rightarrow R_{\log(f)}$
 $R_f = \mathbb{R}$

$\min \rightarrow \log \left(\frac{1}{1} \right) \rightarrow -\infty$
 $\max \rightarrow \log \left(\frac{+\infty}{1} \right) \rightarrow +\infty$

$R_{\log f} = \mathbb{R}$

$\neg) \log \left(\frac{2^x + 1}{2} \right)$
 f

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

$R_{\log f} = \mathbb{R}$

$\log \frac{+\infty}{2} \rightarrow -\infty$

$\log \frac{1}{2} \rightarrow -\infty$

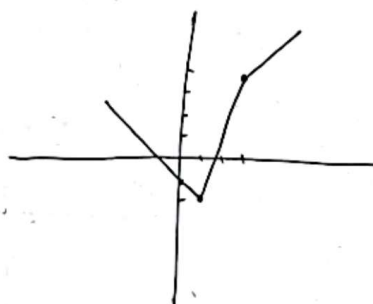
$\log \frac{2}{2} = 0$

$\log \frac{+\infty}{2} \rightarrow +\infty$

صفحه آخر...

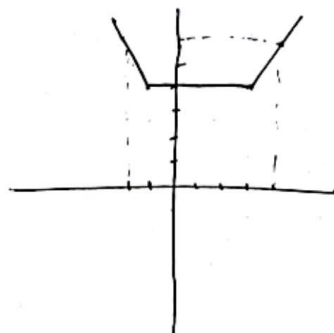
$\alpha) y = |2x - 2| - |2 - 3|$

$y = \begin{cases} x+1 & x > 3 \\ 3x-2 & 1 \leq x \leq 3 \\ -x-1 & x < 1 \end{cases}$



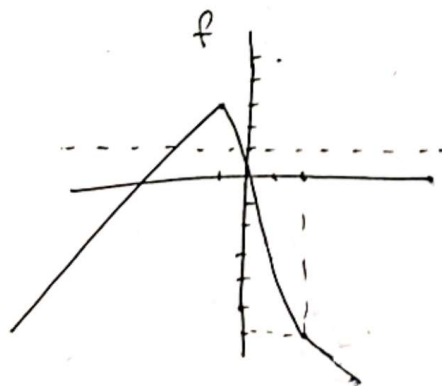
$R = [2, +\infty)$

$\neg) y = |2x - 3| + |2x + 1|$



$R = [3/2, +\infty)$

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



$f = \begin{cases} -x-2 & x > 2 \\ -3x & -1 \leq x \leq 2 \\ x+2 & x < -1 \end{cases}$

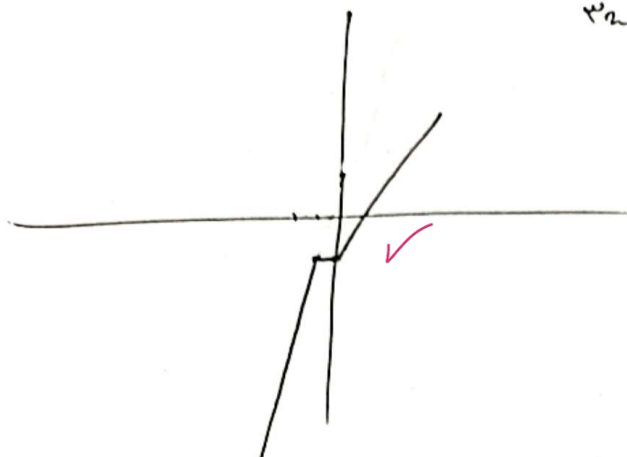
$x+2=1 \rightarrow x=-3$

$-3x=1 \rightarrow x=-\frac{1}{3}$

$(-\infty, -3/2] \cup [-1/2, +\infty)$

$$y = 3x - |x+1| + |x|$$

(2) - 1



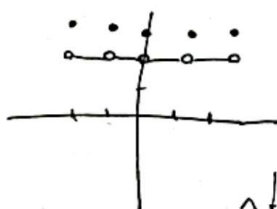
$3x + x + 1 - x =$ $x + 1$	$3x - x - 1 - x =$ -1	$3x - x - 1 + x =$ $x - 1$
-------------------------------	----------------------------	-------------------------------

$$R = (-\infty, +\infty)$$

ا) $y = [x] + [-x] + x$



→



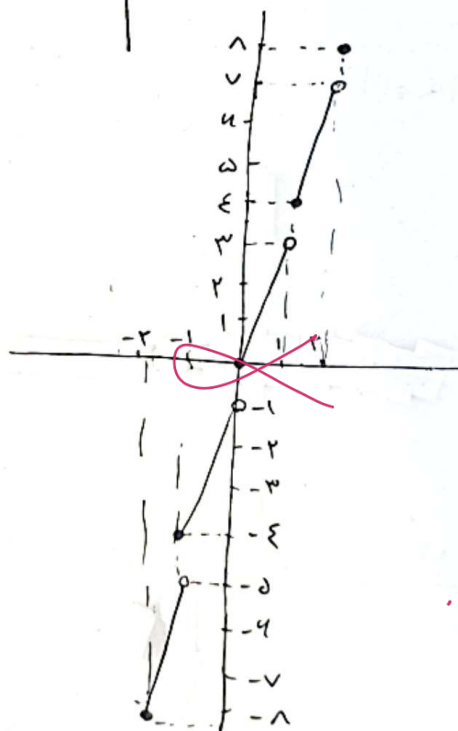
$$R = \{x \mid x \in \mathbb{R}\}$$

(1) - 9

ب) $y = 3x - [x]$

$$\begin{aligned} -2 \leq x < -1 &\rightarrow 3x - 2 \\ -1 \leq x < 0 &\rightarrow 3x - 1 \\ 0 \leq x < 1 &\rightarrow 3x \\ 1 \leq x < 2 &\rightarrow 3x + 1 \\ x = 2 &\rightarrow 3x + 2 = 8 \end{aligned}$$

$$R = [-1, -\infty) \cup [-1, 1) \cup [0, 3) \cup [1, 2) \cup \{2\}$$



صفحة آخر...

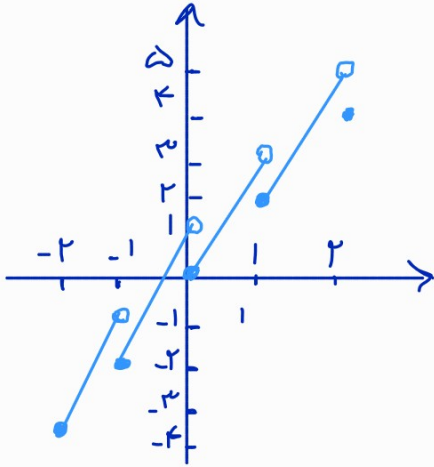
ا) $\sin^2 x - \sin x + 1$ $\left\{ \begin{array}{l} 1 \rightarrow 1 \\ \frac{-b}{2a} = \frac{1}{2} \rightarrow \frac{1}{2} \\ -1 \rightarrow 1 \end{array} \right\} R = \left[\frac{1}{2}, 1 \right]$

(2) - 10

ب) $\sin^2 x + \sin^2 x + 1 \rightarrow (\sin^2 x)^2 + \sin^2 x + 1$ $\left\{ \begin{array}{l} 1 \rightarrow 3 \\ \frac{-b}{2a} = \frac{-1}{2} \rightarrow 0 \text{ و } 1 \\ 0 \rightarrow 1 \end{array} \right\} R = [1, 3]$

ب) $\frac{n^r + 1}{n} = n + \frac{1}{n} \xrightarrow[\frac{a + \frac{1}{a} \leq -r}{a + \frac{1}{a} \geq r}]{} R = (-\infty, -r] \cup [r, +\infty)$ - د

$\xrightarrow{\lg_r} R_y = [1, +\infty)$



$R_y = [-r, \infty)$

(- د