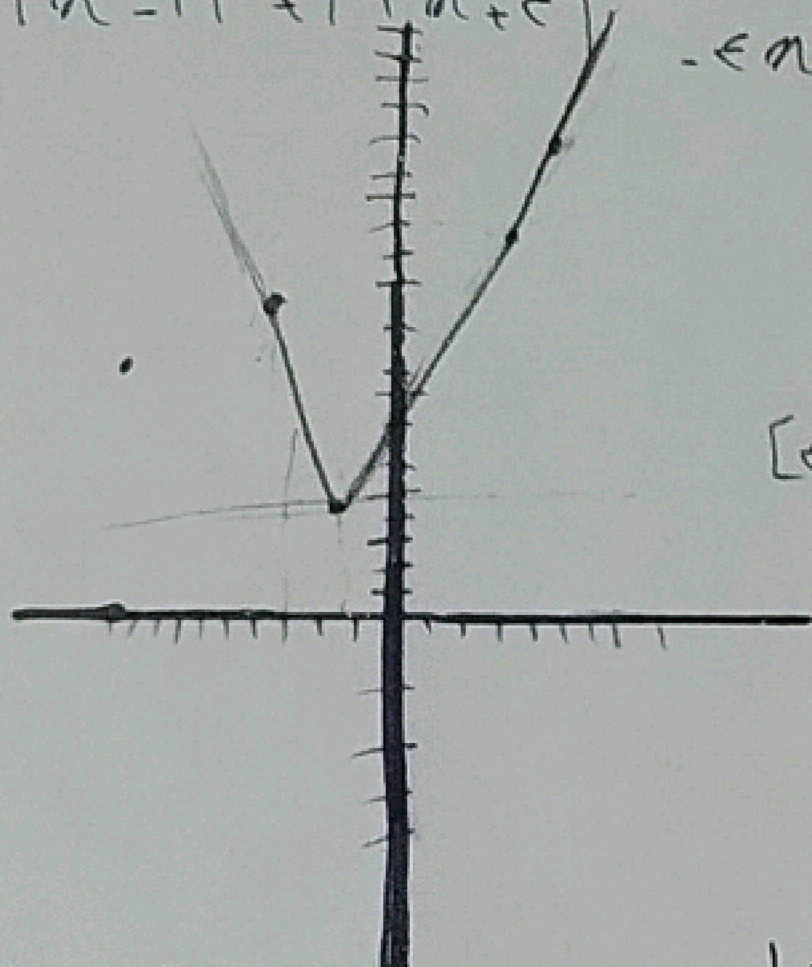
$y = |x-3| + |3x+4|$ (roots: 3, $-\frac{4}{3}$)

$-\frac{4}{3}$		3
$-4x-1$	$-x+3$ $3x+4$	$3x+4+x-3$ $4x+1$

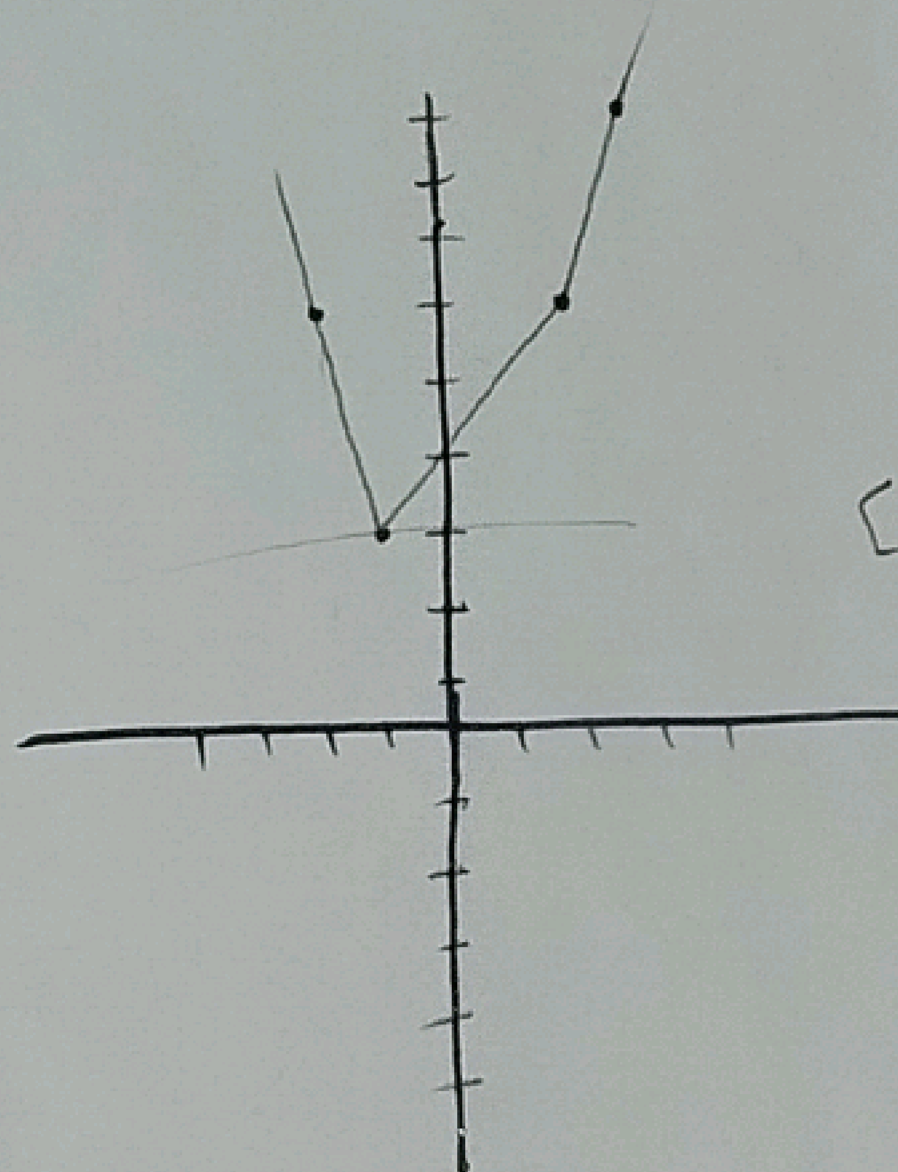
$\frac{13}{3} + 2x - ... = 13$

$\Rightarrow 4\frac{1}{3}$

$4 \downarrow 17$ $\quad -3 \downarrow 11$



$[4\frac{1}{3}, +\infty)$



$[3, +\infty)$

$y = |x-2| + |2x+2| \Rightarrow$ (roots: 2, -1)

$-1 \Rightarrow 3$

$2 \Rightarrow 6$

$-2 \Rightarrow 4+2 \Rightarrow 6$

$3 \Rightarrow 1+8=9$

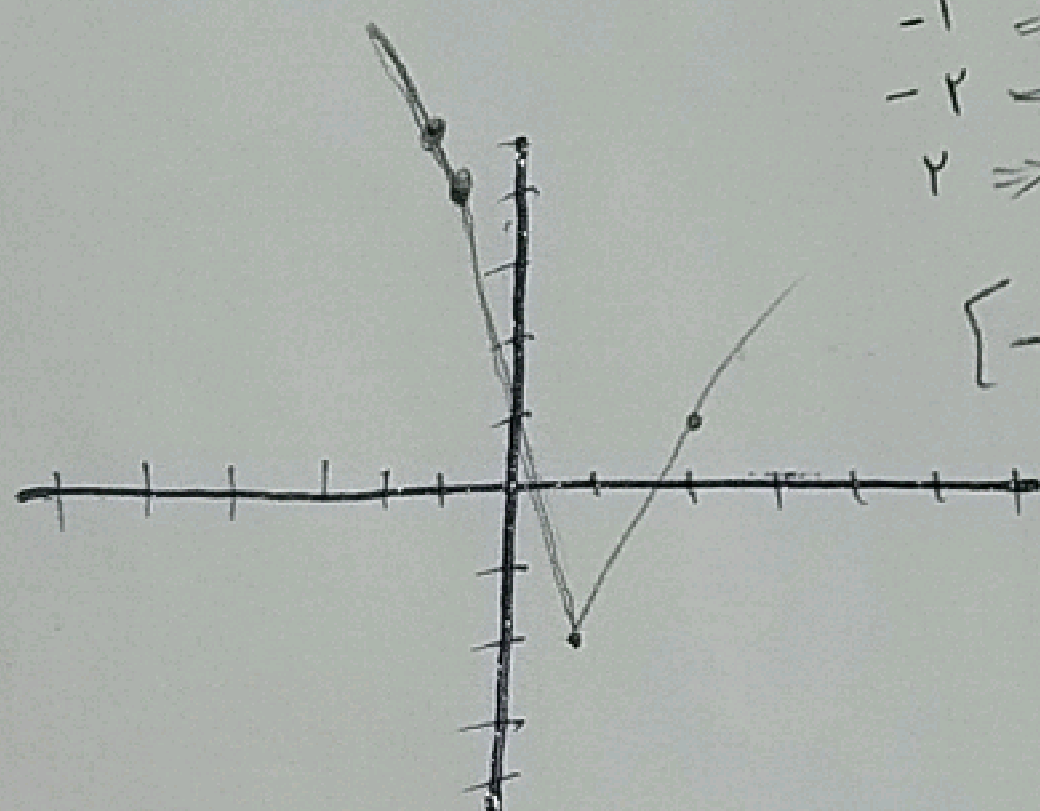
$y = |2x-2| - |x+1|$ (roots: 1, -1)

$1 \Rightarrow -2$

$-1 \Rightarrow 4$

$-2 \Rightarrow +6+(-1)=5$

$2 \Rightarrow 4-3=1$



$[-2, +\infty)$

نوران املی

$y = (x^3 - 3x^2 + 3x \Rightarrow -1) + 1 \Rightarrow (x-1)^3 + 1 = y \Rightarrow y - 1 = (x-1)^3$

$\sqrt[3]{y-1} = x - 1 \rightarrow \sqrt[3]{y-1} + 1 = x \Rightarrow \mathbb{R}$

$y = \frac{1}{x^2 - 2x} \Rightarrow yx^2 - 2yx = 1 \Rightarrow yx^2 - 2yx - 1 \Rightarrow 4y^2 - 4(y \times -1) \Rightarrow 4y^2 + 4y \Rightarrow 4y(y+1)$; $\downarrow 0$ ، $\downarrow -1$

$\frac{- \quad 0}{+ \; 0 - 0 \; +} \Rightarrow \mathbb{R} - (-1, 0)$

$y = \underbrace{x^2 - 4x + \boxed{0}}_{(x-2)^2 \ldots} \Rightarrow 4, 6 \Rightarrow 0 + 6 \Rightarrow [6, +\infty)$

$y = -x^2 + 6x + 3 \Rightarrow \frac{-6}{-2} = 3 \Rightarrow -9 + 18 + 3 \Rightarrow 12 \Rightarrow (-\infty, 12]$

$y = \sqrt{x^2 - 4x - 3} \Rightarrow \frac{+4}{2} = 2 \Rightarrow 4 - 8 - 3 < 0 \quad x \Rightarrow [0, +\infty)$

$y = \sqrt{6x - x^2} \Rightarrow \frac{-6}{-2} = 3 \Rightarrow 18 - 9 \Rightarrow 9 \Rightarrow \sqrt{(-\infty, 9]} \Rightarrow [0, 3]$

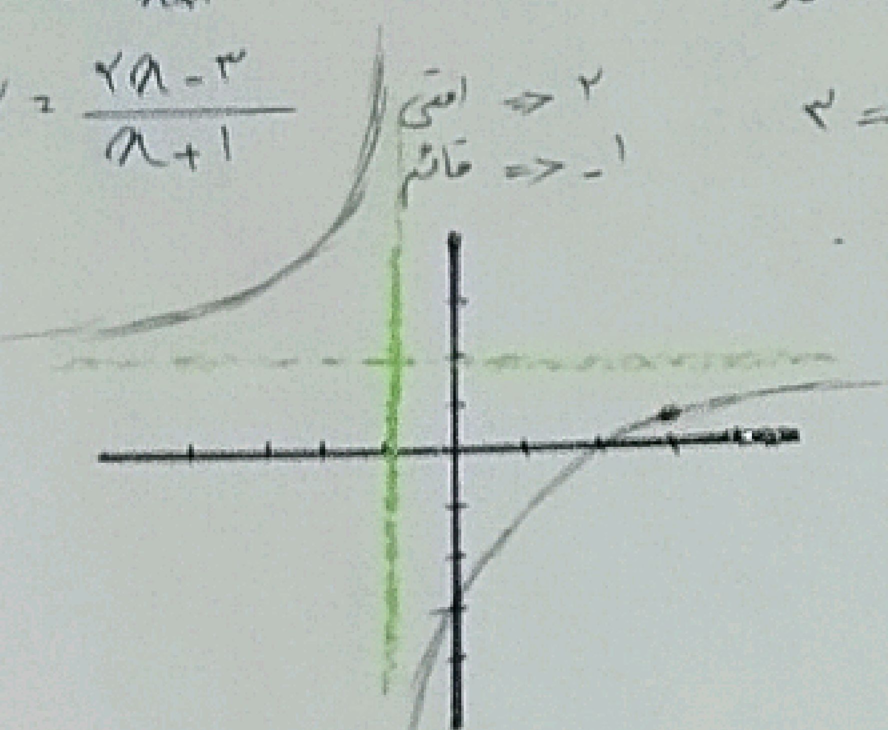
$y = x^3 - 5x^2 + 2x + 1 \Rightarrow \mathbb{R}$ $\qquad$ $y = \sqrt{x^7 - 6x^4 + 5x + 1} \Rightarrow \sqrt{\mathbb{R}} \Rightarrow [0, +\infty)$

$y = x^7 - 6x^4 + 3x + 2 \Rightarrow \mathbb{R}$ $\qquad$ $y = (x^5 - 4x^2 + 2x + 1)^2 \Rightarrow [0, +\infty)$

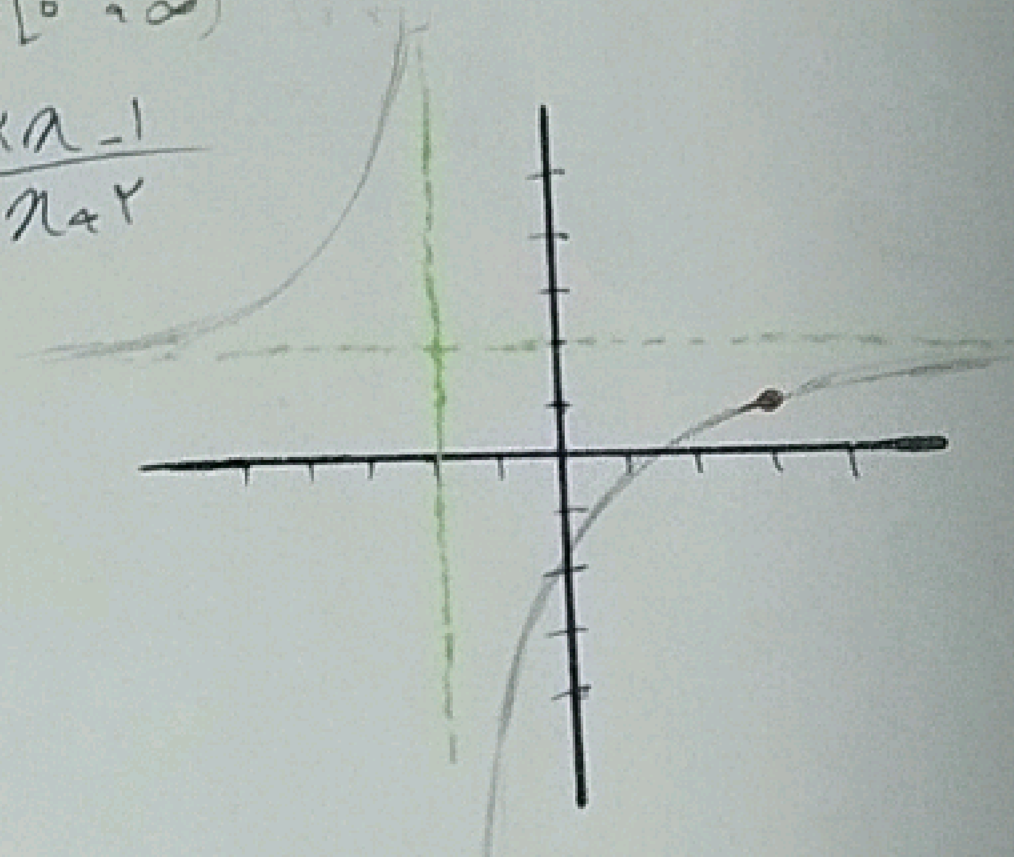
$y = \frac{3x+1}{x-2} \Rightarrow \mathbb{R} - \{3\}$ $\qquad$ $y = \frac{2x+1}{x+1} \Rightarrow \mathbb{R} - \{2\}$

$y = \sqrt{\frac{2x+3}{x+1}} \quad \sqrt{\mathbb{R} - \{2\}} \Rightarrow [0, +\infty) - \{\sqrt{2}\}$ $\qquad$ $y = \sqrt{\frac{3x+1}{2-x}} \quad \mathbb{R} - \{-3\} \Rightarrow [0, +\infty)$

$y = \frac{2x-3}{x+1}$ افقی $\Rightarrow 2$ ، قائم $\Rightarrow -1$ $\qquad$ $3 \Rightarrow \frac{6-3}{4} = \frac{3}{4}$ $\qquad$ $y = \frac{2x-1}{x+2}$



افقی 2
قائم -2
$3 \Rightarrow \frac{5}{5} = 1$



$y = \sin x + \frac{1}{\sin x}$ $\begin{matrix} +\checkmark \\ -\checkmark \end{matrix} \Rightarrow (-\infty, -2] \cup [2, +\infty)$ $\qquad$ $y = \frac{x^4 + 1}{x^2} \Rightarrow x^2 + \frac{1}{x^2}$ $\begin{matrix} +\checkmark \\ -\checkmark \end{matrix} \Rightarrow (-\infty, -2] \cup [2, +\infty)$

$y = \frac{\sqrt[3]{x^2} + 1}{\sqrt[3]{x}} \Rightarrow \sqrt[3]{x} + \frac{1}{\sqrt[3]{x}} \quad (-\infty, -2] \cup [2, +\infty)$ $\qquad$ $y = \sqrt{x} + \frac{1}{\sqrt{x}}$ $\begin{matrix} +\checkmark \\ -\times \end{matrix}$ $[2, +\infty)$

$y = x^2 + \frac{1}{x^2+3} + 3 \Rightarrow x^2 + 3 = \frac{1}{x^2+3} \Rightarrow (x^2+3)^2 - 1 = 0 \Rightarrow (x^2 + 3 - 1)(x^2 + 3 + 1) \times$

$\min \Rightarrow 0 \Rightarrow 3 + \frac{1}{3} \Rightarrow 3\frac{1}{3} - 3 \Rightarrow [\frac{1}{3}, +\infty)$

$y = \frac{x^2 + 5}{\sqrt{x^2 + 4}} \Rightarrow \sqrt{x^2 + 4} + \frac{1}{\sqrt{x^2+4}} \Rightarrow$ $\begin{matrix} +\checkmark \\ -\times \end{matrix}$ $\Rightarrow [\frac{5}{2}, +\infty)$

$\min, 4 \Rightarrow 2$