

(1)

$$\text{الف)} \quad y = \frac{|u|+1}{|u|-2} \rightarrow |u| = \frac{y+1}{y-1} \gg \frac{-\frac{1}{2}}{+\frac{1}{2}-\frac{1}{2}+}$$

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

$$\text{ب)} \quad y = \frac{u^2+1}{|u|} = |u| + \frac{1}{|u|} \xrightarrow{u \gg 0} R_f = [2, +\infty)$$

$$y = \frac{u^2+2u-2}{u+3} \rightarrow yu+3y = u^2+2u-2 \rightarrow u^2+(1-y)u-(2+3y) = 0$$

(2)

$$y = \frac{-2+y \pm \sqrt{\Delta}}{2} \Rightarrow \Delta \geq 0 \sim 4+y^2-4y+4+12y \gg$$

$$R_f = (-\infty, -2] \cup [-2, +\infty)$$

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

$$(y+4)(y+3) \gg 0$$

$$\frac{-y-x}{+y-x+}$$

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

$$u^2-u+\frac{1}{2} \neq 0 \xrightarrow{\Delta < 0} D_f = \mathbb{R}$$

(3)

$$\frac{(u-\frac{1}{2})^2}{(u-\frac{1}{2})^2+\frac{1}{4}} \rightarrow \frac{\square^2}{\square^2+\frac{1}{4}}$$

$$\begin{cases} \max \square^2 = \infty \\ \min \square^2 = 0 \end{cases} \rightarrow \frac{\infty}{\infty+\frac{1}{4}} = 1, \quad \frac{0}{0+\frac{1}{4}} = 0$$

$$R_f = [0, 1)$$

(4)

$$\text{الف)} \quad y = \sqrt{-u^2+4u-1} \rightarrow \frac{-\Delta}{4a} = \frac{-(16-4)}{-4} = 3$$

(5)

$$R_f = (-\infty, 3] \xrightarrow{\sqrt{\quad}} R_{(y)} = [0, 3]$$

$$\text{ب)} \quad y = \sqrt[3]{2u^2-4u} \rightarrow \frac{-\Delta}{4a} = \frac{-(0+4)}{4} = -1$$

$$R_{(y)} = [-1, +\infty) \xrightarrow{\sqrt[3]{\quad}} R_f = [-2, +\infty)$$

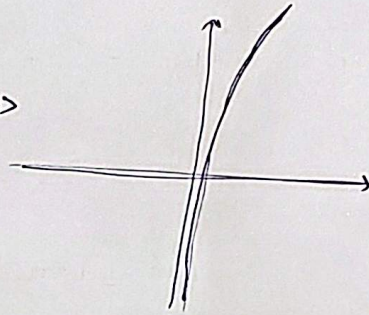
الف) $y = \log_{(x^3 - x + 1)}^{(f)}$

$R_f = \mathbb{R}$ (ریشه این معادله آن مرز است)

⑤

$\Rightarrow y = \log_g^{\mathbb{R}}$

$R_g = \mathbb{R}$

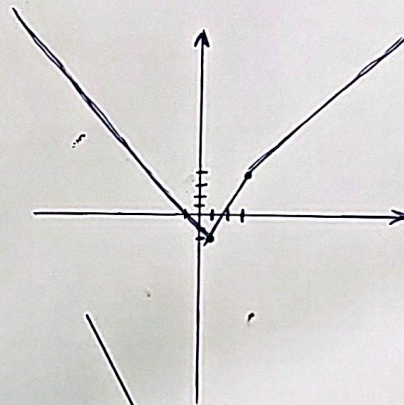
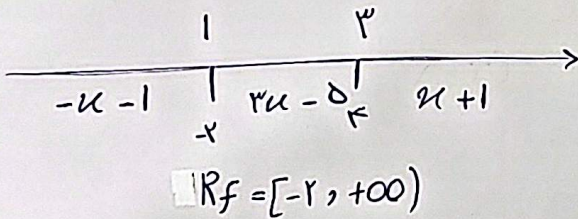


ب) $y = \log_{\sqrt{x}}^{(f)} \left(\frac{x^2 + 1}{x} \right)$

$x + \frac{1}{x} \xrightarrow{x > 0} \mathbb{R}_f = [2, +\infty)$

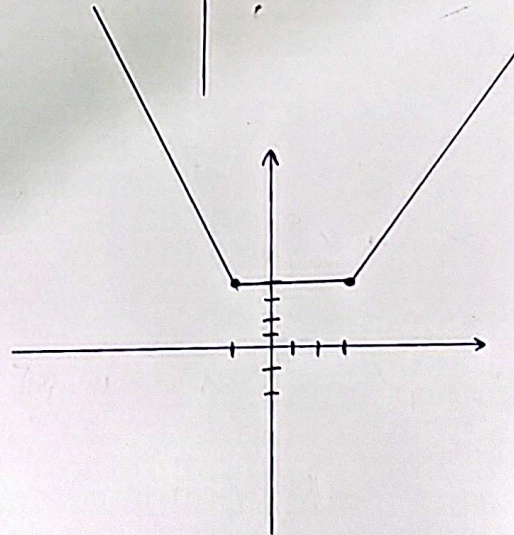
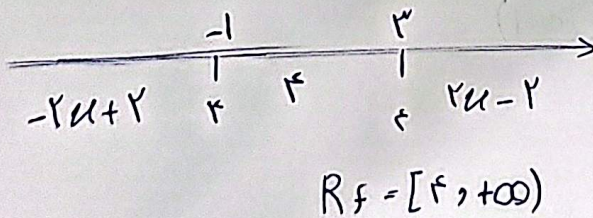
$\begin{cases} \log_{\sqrt{x}}^2 = 1 \\ \log_{\sqrt{x}}^{+\infty} = +\infty \end{cases} \Rightarrow R_g = [1, +\infty)$

الف) $y = |2x - 2| - |x - 3|$



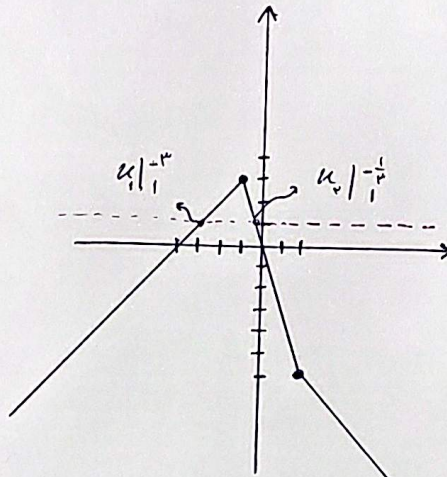
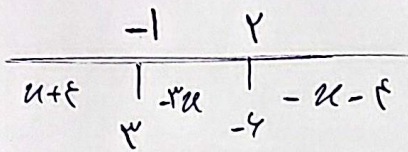
⑥

ب) $y = |x - 3| + |x + 1|$



$$|x-2| - |2x+2| < 1$$

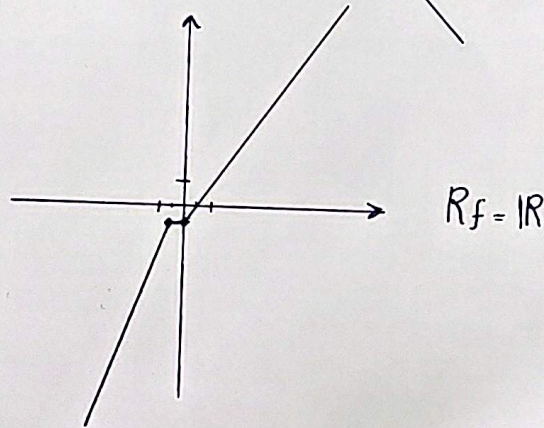
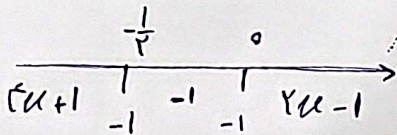
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$$x \in (-\infty, -\frac{1}{2}) \cup (2, +\infty)$$

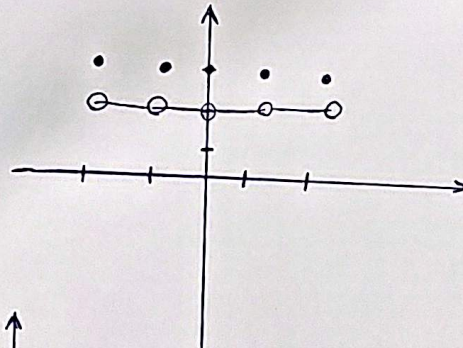
$$f(x) = 3x - |2x+1| + |x|$$

1



$$[a] + [3-a] \rightarrow [a] + [-a] + 3$$

$$R_f = \{2, 3\}$$

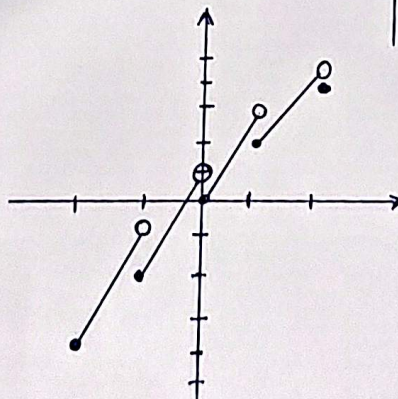


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$$b) 3x - [a]$$

$$R_f \xrightarrow{\text{در بازه مشخصه}} [-4, \infty)$$

$$R_f \xrightarrow{\text{در آن بازه به طوری}} \mathbb{R}$$



داده: A بر

معین رضی

تکلیف ۵

الف) $y = \sin^2 u - \sin u + 1$

$$\square = \sin \begin{cases} \text{max: } 1 \longrightarrow 1 \\ \text{min: } -1 \longrightarrow 3 \\ \frac{h}{r\alpha} : \frac{1}{r} \longrightarrow \frac{3}{\epsilon} \end{cases}$$

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$$R_f = \left[+\frac{3}{\epsilon}, 3 \right]$$

ب) $y = \sin^2 u + \sin^2 u + 1$

$$\square = \sin^2 \begin{cases} \text{max: } 1 \longrightarrow 3 \\ \text{min: } 0 \longrightarrow 1 \\ \frac{h}{r\alpha} : -\frac{1}{r} \times \end{cases}$$

$$R_f = [1, 3]$$