

$$y|x| - 2y = |x| + 1 \rightarrow |x| \left(\frac{y}{y-1} \right) = \frac{1+2y}{y-1} \Rightarrow D_y = \frac{-\frac{1}{y}}{\frac{1}{y} - \frac{1}{y+1}} \quad (2)$$

$$R_{f(x)} = (-\infty, -\frac{1}{y}] \cup (1, \infty)$$

$$\frac{|x|^2 + 1}{|x|} = |x| + \frac{1}{|x|} \rightarrow a + \frac{1}{a} \rightarrow R_{f(x)} = [r, \infty) \quad (1)$$

برای $|x|$ همواره مثبت است

$$x^2 + rx - r = yx + ry \rightarrow x^2 + (r-y)x - (r+ry) = 0 \rightarrow x = \frac{-b \pm \sqrt{\Delta}}{2a}$$

$$\rightarrow x = \frac{y+r \pm \sqrt{r^2 + y^2 - 4y + 4r + 4ry}}{2} \rightarrow \Delta = y^2 + 4y + 4r \geq 0$$

$$\rightarrow \frac{-y}{2} - \frac{r}{2} \rightarrow R_{f(x)} = (-\infty, -\frac{y}{2}] \cup [-\frac{r}{2}, \infty) \quad (2)$$

$$x^2 - x + 1 \neq 0 \rightarrow \Delta = -3 < 0 \rightarrow \text{همواره مثبت} \rightarrow R_{f(x)} = \mathbb{R} \quad (1)$$

$$x^2 - x + \frac{1}{x} = yx^2 - yx + y \rightarrow (1-y)x^2 - (1-y)x + (\frac{1}{x} - y) = 0$$

$$\rightarrow x = \frac{1-y \pm \sqrt{1+y^2 - 4y + 4y^2 - 4y^2}}{2(1-y)} \rightarrow \sqrt{1+y^2 - 4y}$$

$$, 1-y \neq 0 \rightarrow y \neq 1 \rightarrow R_{f(x)} = \left[\frac{1}{2}, \infty \right) \quad (2)$$

صفحه آخر...

پیدا کردن بازه‌های باز و بسته بودن

برده نه دامن!

صفحه آخر...

$$\lim_{x \rightarrow \frac{b}{a}} \frac{f(x)}{g(x)} \rightarrow y_{\text{derb}} = -1 + 1 - 1 = -1 \rightarrow R_{(-x^2 + 4x - 1)} = (-\infty, 3] \rightarrow (1)$$

$$R_{(\sqrt{-x^2 + 4x - 1})} = R_{f(x)} = \sqrt{(-\infty, 3]} = [0, \sqrt{3}] \quad (2)$$

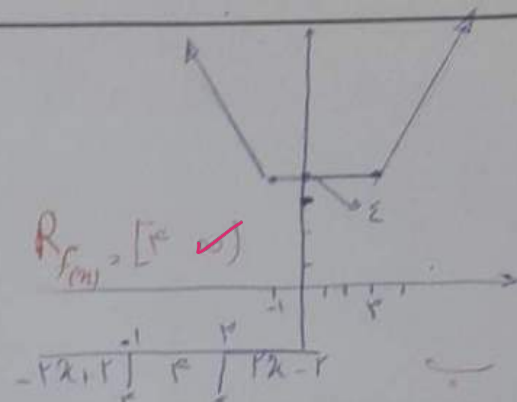
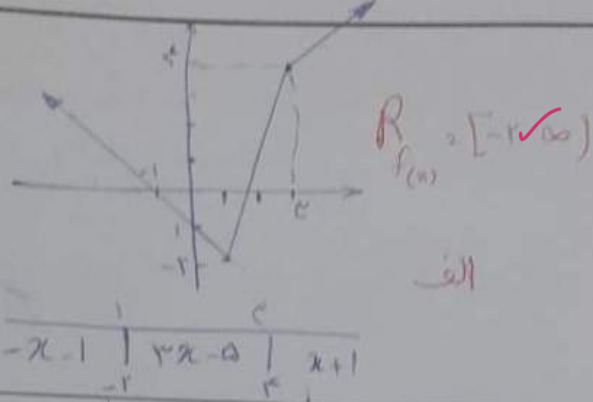
الف) چون برد عبارت درون برانتر $\mathbb{R}$ است $\mathbb{R}$ است $R_{f(x)} = \mathbb{R}$

ب) دامنه $\mathbb{R}^+$ است $\mathbb{R}$ است $R_{f(x)} = \mathbb{R}$

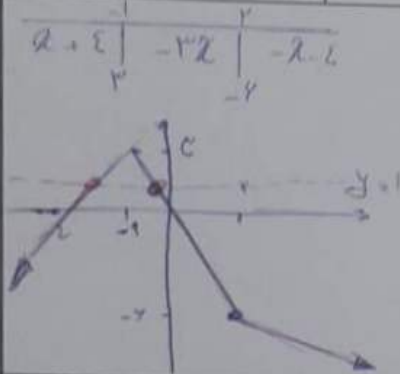
$$\frac{x^2 + 1}{x} = x + \frac{1}{x} \rightarrow R_{(x + \frac{1}{x})} = (-\infty, -1] \cup [1, \infty) \quad (2)$$

$$f(x) = \log_r \left[\frac{1}{x} \right] \Rightarrow R_{f(x)} = [1, \infty)$$

$\log_r t \mid t \in [r, \infty)$



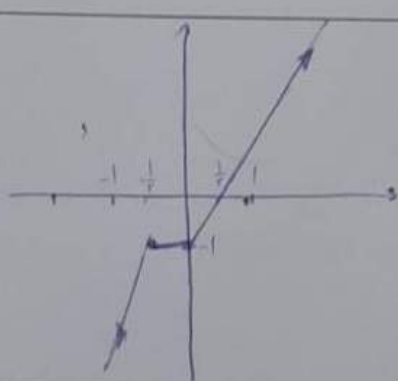
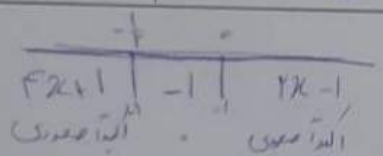
(2)



$$\begin{aligned} x+1 &= 1 \rightarrow x=0 \\ -1 &= 1 \rightarrow x=-2 \end{aligned} \Rightarrow$$

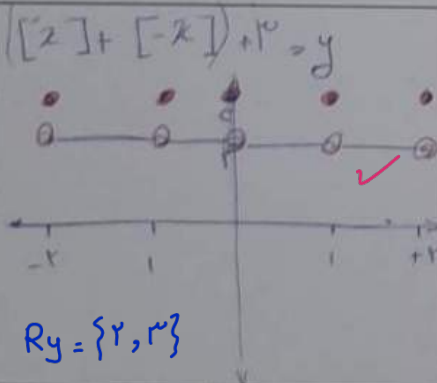
$$x \in (-\infty, -1] \cup [-\frac{1}{2}, \infty)$$

(2)

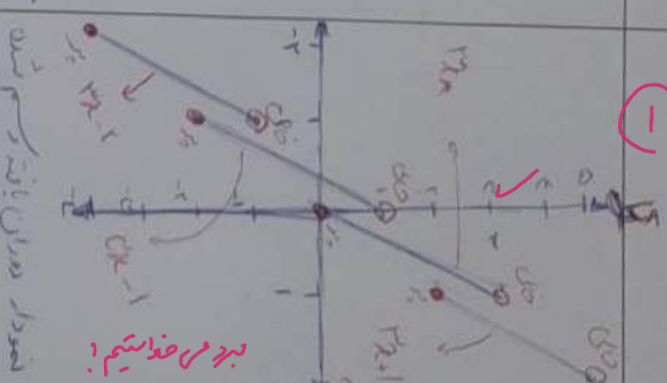


$$R_{f(x)} = \mathbb{R}$$

(2)



$$R_{f(x)} = [-1, \infty)$$



(1)

$$\begin{aligned} \sin x &= 1 \rightarrow 1+1+1=3 \\ \sin x &= -1 \rightarrow 1+1+1=3 \\ \sin x &= \frac{1}{2} \rightarrow \frac{1}{2} + \frac{1}{2} + 1 = 2 \end{aligned}$$

$$R_{f(x)} = [\frac{1}{2}, 3]$$

$$\begin{aligned} \sin x &= 1 \rightarrow 1+1+1=3 \\ \sin x &= -1 \rightarrow 1+1+1=3 \\ \sin x &= \frac{1}{2} \rightarrow \frac{1}{2} + \frac{1}{2} + 1 = 2 \end{aligned}$$

$$R_{f(x)} = [\frac{1}{2}, 3]$$

(1)

$$f(n) = \frac{(n - \frac{1}{r})^r}{(n - \frac{1}{r})^r + \frac{r}{r}}$$

۳- مخرج کسر همواره مثبت است پس دامنه IR است

طرفین وسطین $\rightarrow y n^r - y n + y = n^r - n + \frac{1}{r} \rightarrow (y-1)n^r - (y-1)n + y - \frac{1}{r} = 0$

$$n = \frac{y-1 \pm \sqrt{(y-1)^2 - 4(y-1)(y-\frac{1}{r})}}{2(y-1)} \rightarrow \Delta \geq 0 \rightarrow (y-1)(y-\frac{1}{r}-y+1) \geq 0$$

$$\frac{0}{-} \quad \frac{1}{+} \quad \frac{1}{-} \Rightarrow y = [0, 1]$$

غیرب n بنایه صفر شود یعنی $y \neq 1$ است

و تابع در انزای هیچ مقداری برابر یک نمی شود پس برد برابر است با: $R_y = [0, 1)$

می توانست از روش مربع هم استفاده کنی

$$f(n) = \frac{n^r}{n^r + \frac{r}{r}}$$

۴- $\min \left| \begin{array}{l} -\frac{b}{r_a} = r \\ y = -1 \end{array} \right| \Rightarrow R_y = \sqrt{[-1, +\infty)} = [-1, +\infty)$

$$\sin^r n = 0 \rightarrow y = 1$$

$$\sin^r n = 1 \rightarrow y = r$$

$$\sin^r n = -\frac{1}{r} \times$$

$$\left. \begin{array}{l} \sin^r n = 0 \rightarrow y = 1 \\ \sin^r n = 1 \rightarrow y = r \end{array} \right\} \rightarrow R_y = [1, r]$$

۱۰ ب)