

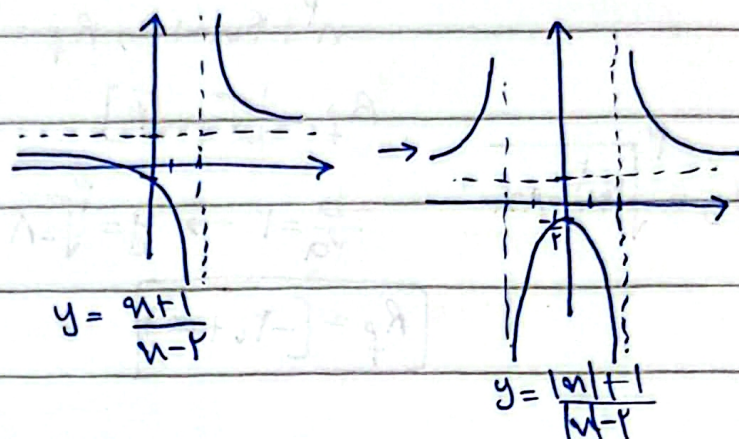
دواردم فصل

تکلیف کرده

نیایش شاه تهری

الف) $y = \frac{|x|+1}{|x|-2}$

$x=0 \rightarrow y = -\frac{1}{2}$



$R_f = \mathbb{R} - (-\frac{1}{2}, 1]$

ب) $y = \frac{x^2+1}{|x|} \rightarrow y = |x| + \frac{1}{|x|} \rightarrow |x| > 0 \rightarrow R_f = [2, +\infty)$

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

$\Delta = y^2 - 4y + 4 + 4(2y+2) = y^2 + 4y + 12$
 $x = \frac{(y-2) \pm \sqrt{y^2+4y+12}}{2} \rightarrow y^2+4y+12 \geq 0$
 $(y+4)(y+2) \geq 0$

$R_f = (-\infty, -4] \cup [-2, +\infty)$

$\frac{-y}{+} \frac{-2}{-} \frac{+}{+}$

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

$x^2-x+1 \neq 0 \rightarrow \Delta < 0 \rightarrow D_f = \mathbb{R}$ ③

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

$\frac{-b}{2a} = \frac{1}{2} \rightarrow 1 - \frac{\frac{1}{2}}{f(\frac{1}{2})} = 0$
 $1 - \frac{\frac{1}{2}}{f(+\infty)} = 1$
 $R_f = [0, 1)$

max, min

$$\text{الف) } y = \sqrt{x^p + kx - 1} \quad \frac{-b}{pa} = p \rightarrow -(p)^p + 1 - 1 = p \quad (K)$$

$$-x^p + kx - 1 \rightarrow R_f = (-\infty, p]$$

$$R_f = [0, \sqrt{p}]$$

$$\text{ب) } y = \sqrt[p]{kx^p - 1}$$

$$\frac{-b}{pa} = p \rightarrow y = \sqrt[p]{-1} = -1$$

$$R_f = [-1, +\infty)$$

$$\text{الف) } y = \log(x^p - x + 1) \quad x^p - x + 1 \rightarrow R_f = \mathbb{R} \quad (a)$$

$$\log(x^p - x + 1) \rightarrow R_f = \mathbb{R}$$

$$\text{ب) } y = \log_p\left(\frac{x^p + 1}{x}\right)$$

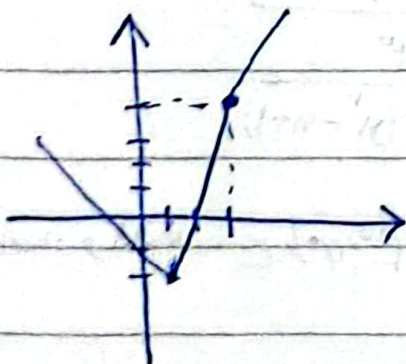
$$\left. \begin{array}{l} \frac{x^p + 1}{x} = x + \frac{1}{x} \\ x + \frac{1}{x} > 0 \end{array} \right\} \rightarrow R_f = [1, +\infty)$$

$$\log_p\left(\frac{x^p + 1}{x}\right) \rightarrow R_f = [1, +\infty)$$

$$\text{الف) } y = |kx - p| - |x - p| \quad (4)$$

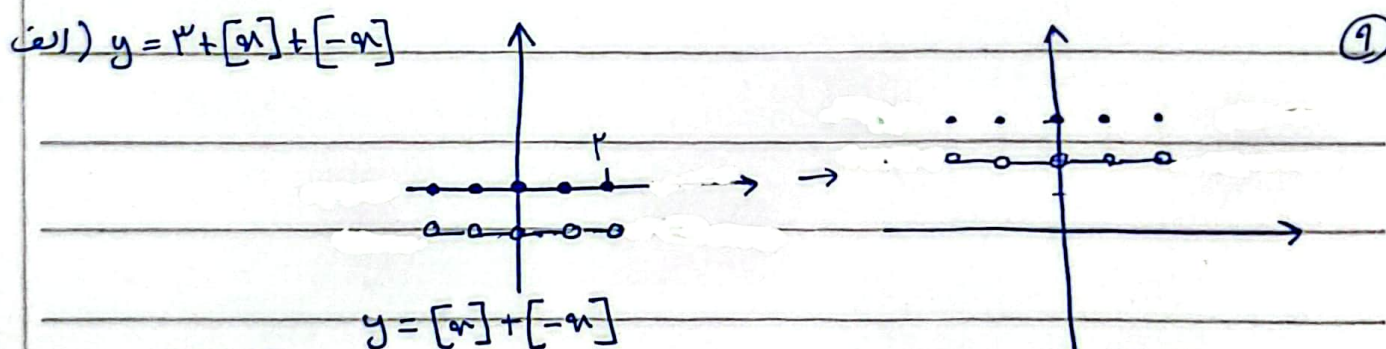
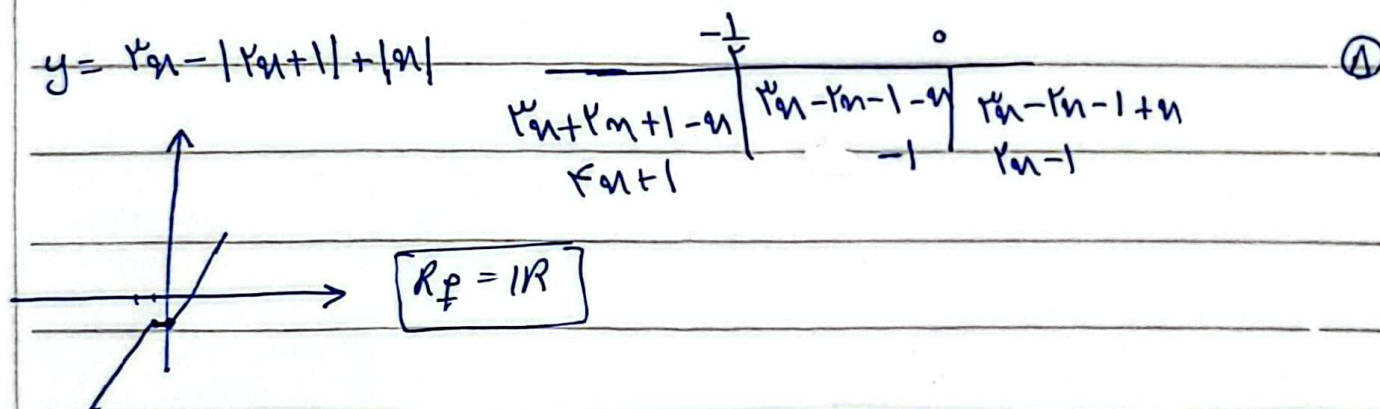
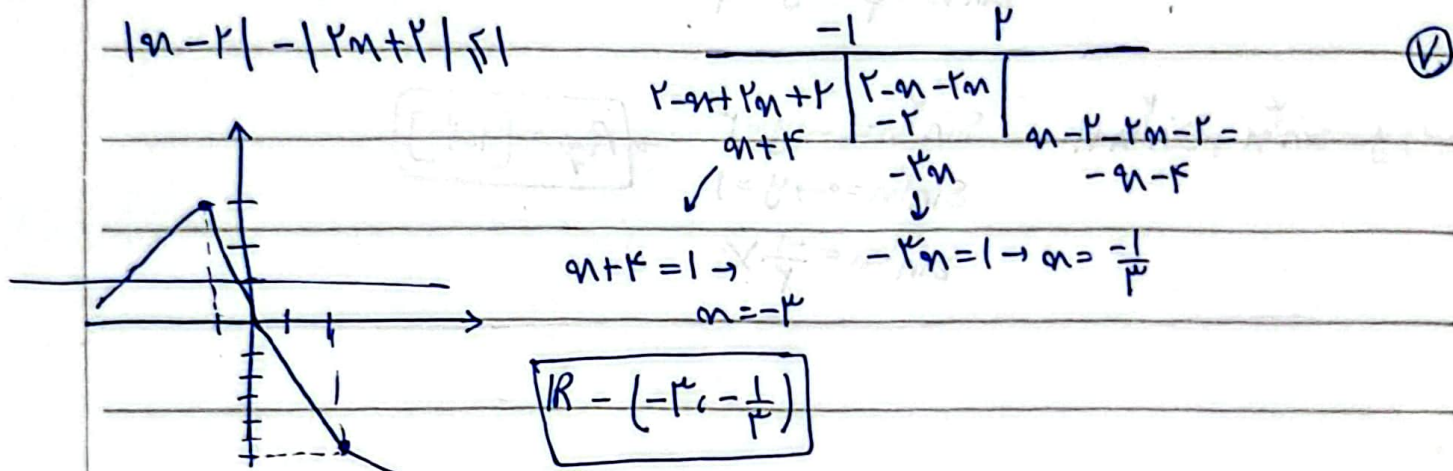
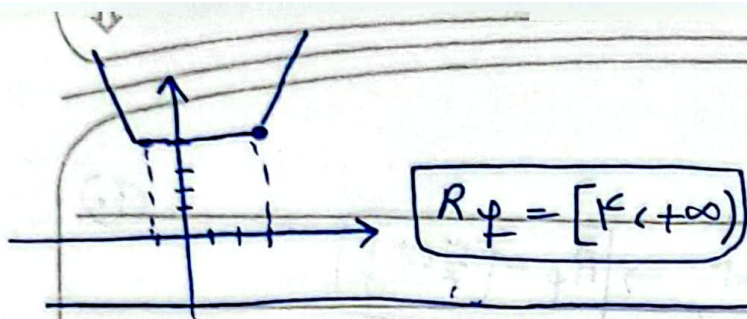
$$\begin{array}{c|c|c} -1 & p & \\ \hline p - kx + x - p = -x + 1 & kx - p + x - p = x - 2p & kx - p - x + p = -x \end{array}$$

$$R_f = [-1, +\infty)$$



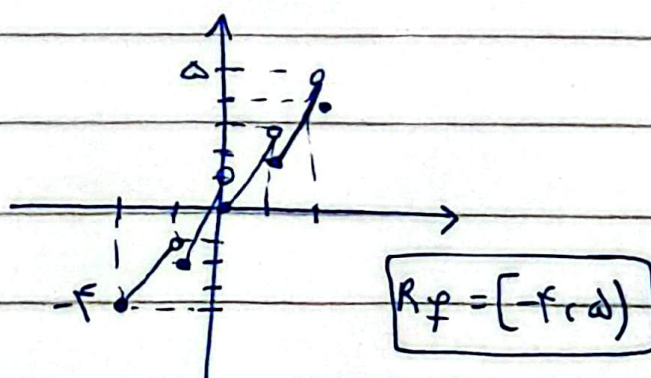
$$\text{ب) } y = |x - p| + |x + 1|$$

$$\begin{array}{c|c|c} -1 & p & \\ \hline p - x - x - 1 = -2x + p - 1 & p - x + x + 1 = p + 1 & x - p \end{array}$$



$$R_f = \{r, r\}$$

- $\circ) y = r|x| - [x]$
 $-r \leq x < -1 \rightarrow y = r|x| + r$
 $-1 \leq x < 0 \rightarrow y = r|x| + 1$
 $0 \leq x < 1 \rightarrow y = r|x|$
 $1 \leq x < r \rightarrow y = r|x| - 1$
 $x = r \rightarrow y = r|x| - r$



$$\text{a)} y = \sin^2 x - \sin x + 1 \quad \sin x = 1 \rightarrow y = 1$$

$$\sin x = -1 \rightarrow y = 1$$

$$\sin x = \frac{1}{r} \rightarrow y = \frac{r}{r}$$

$$\rightarrow R_f = \left[\frac{r}{r}, 1 \right]$$

①.

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

$$\sin^2 x = 1 \rightarrow y = 1$$

$$\sin^2 x = 0 \rightarrow y = 1$$

$$\sin^2 x = \frac{1}{r} \times$$

$$\rightarrow R_f = [1, 1]$$