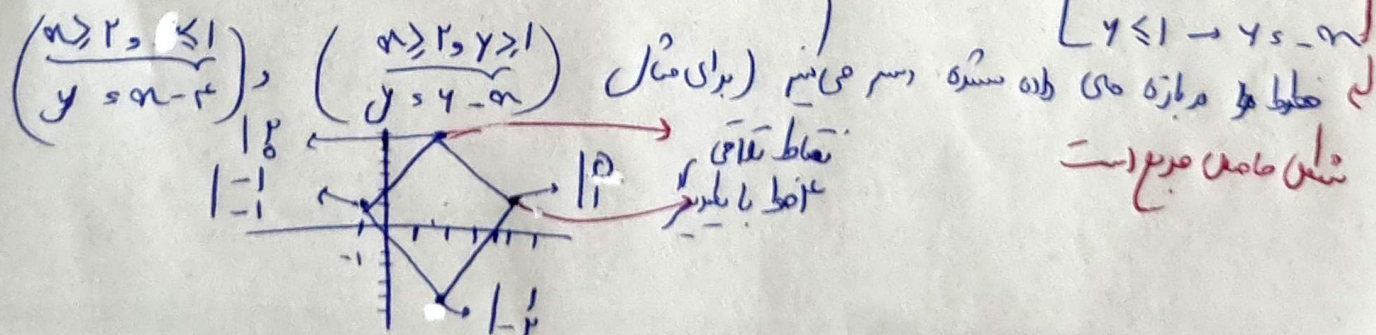
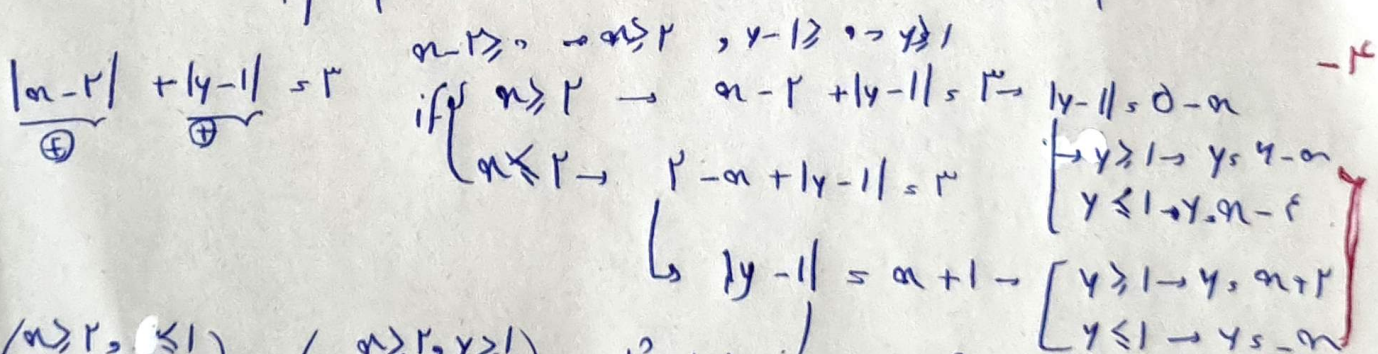
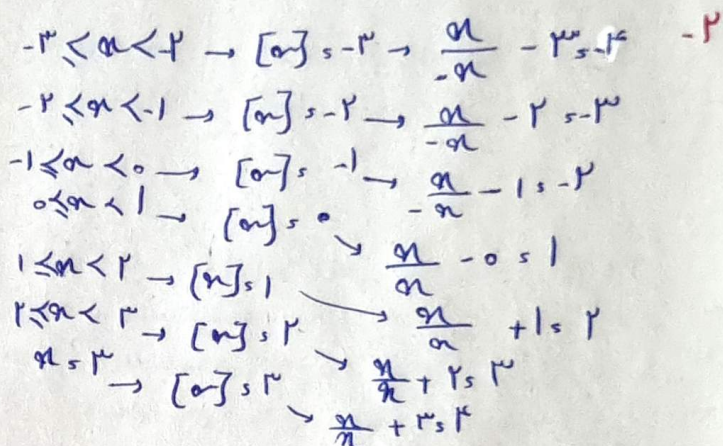


$\therefore y(n) = r \cos(n - \mu)$



الف) $f(x) = x + \frac{1}{x} + \sqrt{x + \frac{1}{x}} \rightarrow \sqrt{x + \frac{1}{x}} \quad x \rightarrow f(x) = t^2 + \sqrt{t}$ -6

$R_f = [1 + \sqrt{2}, +\infty)$ $\begin{cases} t_{\max} = +\infty \rightarrow y \rightarrow +\infty \\ t_{\min} = \sqrt{2} \rightarrow 1 + \sqrt{2} = y \\ \frac{-b}{2a} = \frac{-1}{2} = -\frac{1}{2} \rightarrow \sqrt{x + \frac{1}{x}} \end{cases}$

ب) $y = (1 - \sin \alpha)(1 + \sin \alpha) \rightarrow y = -\sin^2 \alpha + \sin \alpha + 1$

$R_f = [0, 1]$ $\begin{cases} \sin \alpha_{\max} = 1 \rightarrow y = -1 + 1 + 1 = 1 \\ \sin \alpha_{\min} = -1 \rightarrow y = -1 - 1 + 1 = -1 \\ \sin \alpha = \frac{-b}{2a} = \frac{-1}{2} \rightarrow y = 1 \end{cases}$

$f(x) = \frac{1}{x}x + 1 \rightarrow x \in [1, 2]$ $S_q = \frac{1}{x}x + 1 + \frac{1}{x}x + 1$ -4

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

$f(x) = \sqrt{ax^2 + bx + c} \rightarrow R_f = [1, +\infty)$ $f(x) = 1$ -5

$x = a \rightarrow \sqrt{pb + c} = 0 \rightarrow pb + c = 0$ $\sqrt{3b + c} = 1 \rightarrow 3b + c = 1$ $b \leq 1$ $c \geq 1$

$g(x) = \sqrt{bx^2 + ax - c} = \sqrt{x^2 + 0 + 1} = \sqrt{x^2 + 1} \rightarrow \frac{-b}{2a} = 0 \rightarrow \sqrt{1} = 1$

$f(x) = \frac{x^2 - 1}{x + 1} \quad R_f = \mathbb{R} - \{a, b\} \quad R_f = [c, +\infty) = [1, +\infty)$ -1

$f(x) = \frac{x(x-1)(x+1)}{(x+1)} = x(x-1) \rightarrow x^2 - x \rightarrow \text{ext} \left|_{-1}^1 \right. \rightarrow R_f = [-1, +\infty)$

$x^2 - x \neq 1 \rightarrow x^2 - x - 1 \neq 0 \rightarrow (x-1)(x+1) \neq 0 \rightarrow x \neq 1 \text{ and } x \neq -1$ $\frac{c-1}{c+1}$

$f\left(\frac{a+b}{c}\right) = f\left(\frac{1-1}{-1}\right) = f(-1) = 1$

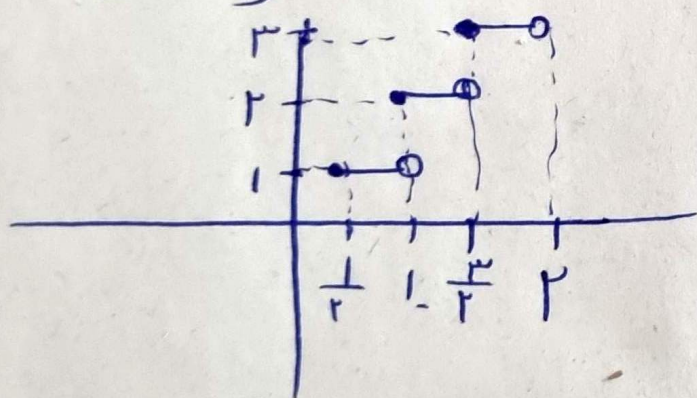
$$y = \sqrt{ax^2 + bx + c} \quad D_f[a, b]$$

-9

$$\text{Shift} \rightarrow (x-1)^2 = x^2 - 4x + 1 \Rightarrow \begin{cases} a = -4 \\ b = 1 \end{cases} D_f[-4, 1]$$

$$x = -4 \rightarrow y = -1, \quad x = 1 \rightarrow y = 1 \rightarrow R_f = [-1, 1]$$

$$y = [x] + \left[x + \frac{1}{r}\right] \quad \left(\frac{1}{r}, r\right)$$



$$\frac{1}{r} \leq x < 1 \rightarrow [x] = 0, \quad \left[x + \frac{1}{r}\right] = 1$$

$$1 \leq x < \frac{3}{r} \rightarrow [x] = 1, \quad \left[x + \frac{1}{r}\right] = 1 \Rightarrow y = 2$$

$$\frac{2}{r} \leq x < 2 \rightarrow [x] = 1, \quad \left[x + \frac{1}{r}\right] = 2 \Rightarrow y = 3$$