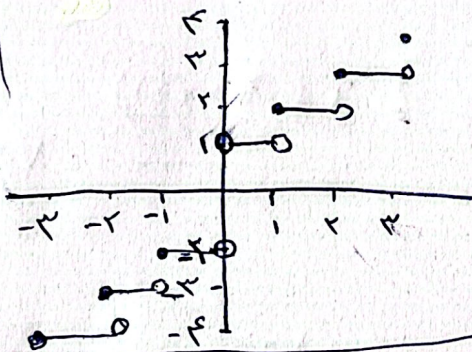


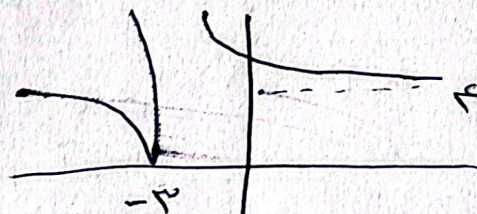
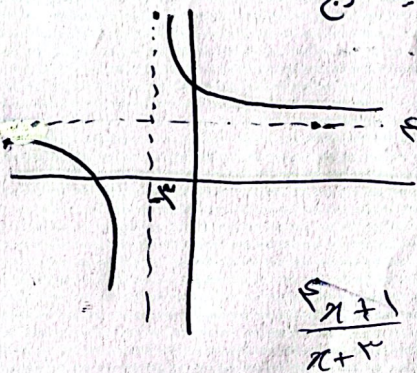
۱- $\underbrace{2 \sin^2 \left(\pi + \frac{\pi}{3} \right) - 1}_{[0, 2]} \Rightarrow R_f = [-1, 1]$

۲- $\underbrace{3 \cos^2 - 4}_{[-3, 3]} \Rightarrow R_f = [-\sqrt{2}, 1]$

۳- $y = \begin{cases} [x] + 1 & x > 0 \\ [x] - 1 & x < 0 \end{cases}$



۴- $\frac{a}{c} = 4$ $\frac{b}{c} = -2$ $\Rightarrow$ بیش خارج



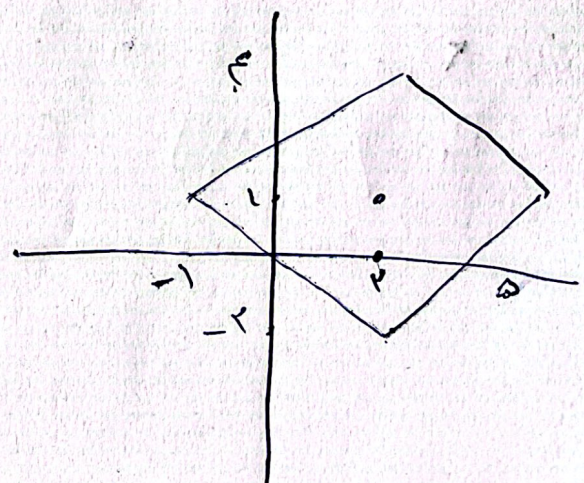
$\left| \frac{x+1}{x+2} \right|$

۵- $\begin{cases} x \geq 2 \\ y \geq 1 \end{cases} \Rightarrow x - 2 + y - 1 = 3 \Rightarrow y = -x + 4$

$\begin{cases} x \geq 2 \\ y \leq 1 \end{cases} \Rightarrow x - 2 - y + 1 = 3 \Rightarrow y = x - 4$

$\begin{cases} x < 2 \\ y < 1 \end{cases} \Rightarrow -x + 2 - y + 1 = 3 \Rightarrow y = -x$

$\begin{cases} x < 2 \\ y > 1 \end{cases} \Rightarrow -x + 2 + y - 1 = 3 \Rightarrow y = x + 2$



$$1) \quad x + \frac{1}{x} \geq 0 \Rightarrow x > 0 \Rightarrow x + \frac{1}{x} \geq 2, \sqrt{x + \frac{1}{x}} \geq \sqrt{2} \quad -3$$

$$\Rightarrow \underbrace{x + \frac{1}{x}}_{[2, +\infty)} + \underbrace{2\sqrt{x + \frac{1}{x}}}_{[2\sqrt{2}, +\infty)} \rightarrow R_f = [2 + 2\sqrt{2}, +\infty)$$

$$2) \quad 1 + \cos x - \sin x - \sin^2 x = -\sin^2 x + \sin x + 1$$

$$\begin{cases} \sin x = -1 \Rightarrow y = 0 \\ \sin x = 1 \Rightarrow y = 1 \\ \sin x = \frac{b}{a} \Rightarrow y = 2 \end{cases} \quad R_f = [0, 1]$$

$$n=1 \Rightarrow f = \frac{-1}{1} + 10 = \frac{9}{1}$$

$$n=2 \Rightarrow f = \frac{-1}{2} + 10 = \frac{19}{2}$$

$$n=10 \Rightarrow f = \frac{-1}{10} + 10 = \frac{99}{10}$$

$$\frac{1+2+\dots+9}{9} = \frac{9(1+9)}{2} = 45 \quad -4$$

$$\begin{cases} a \geq 0 \Rightarrow \sqrt{bx+c} \rightarrow \sqrt{3b+c} = 1 \Rightarrow 3b+c=1 \\ \Delta \geq 0 \rightarrow a(r-r)^2 \geq 1 \Rightarrow a \geq 1 \rightarrow \sqrt{-\frac{c}{a}} \geq 1 \end{cases} \begin{cases} b \geq 1 \\ c \geq 1 \end{cases} \quad -5$$

$$\Rightarrow g(x) = \sqrt{x^2 + 1} \Rightarrow R_f = [1, +\infty)$$

$$x^2 - 5x = (x^2 - 2x)(x+2) \Rightarrow \frac{x^2 - 5x}{x+2} \Rightarrow R \neq \Lambda \rightarrow x^2 - 2x \neq \Lambda \quad -6$$

$$\Rightarrow x^2 - 2x - 1 \neq 0 \Rightarrow D_f = R - \{-1, 1\} \quad \frac{-b}{2a} = \frac{1}{2} = 1 \Rightarrow y = -1 \Rightarrow R_f = [-1, +\infty)$$

$$\sqrt{(x-1)^2} = x-1 \Rightarrow (x-1)^2 = x^2 - 2x + 1 \Rightarrow a = -2, b = 1 \quad -7$$

$$\Rightarrow D_f = [-1, 1] \Rightarrow R_f = [-1, 1]$$

