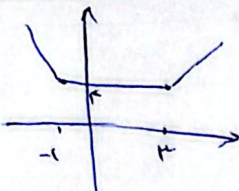
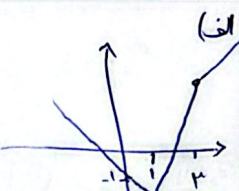
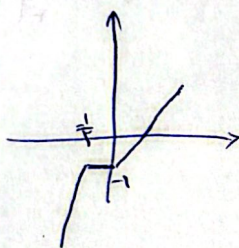
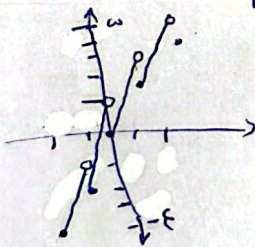
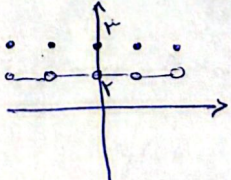


$y = \frac{x^2+1}{ x } \rightarrow y = x + \frac{1}{ x } \quad R = [1, +\infty)$ $\left\{ \begin{array}{l} y = \frac{ x +1}{ x -1} \rightarrow y x - y = x +1 \\ x (y-1) = x +1 \rightarrow x = \frac{y+1}{y-1} \\ \frac{1}{+1} - \frac{1}{-1} \end{array} \right. \quad R = \left(-\infty, \frac{1}{2} \right] \cup (1, +\infty)$	۱
$y = \frac{x^2+2x-2}{x+3} \rightarrow y(x+3) = x^2+2x-2 \rightarrow x^2 + (3-y)x - 2y-6 = 0$ $\Delta \geq 0 \rightarrow (3-y)^2 - 4(-2y-6) \geq 0 \rightarrow y^2 - 6y + 9 + 8y + 24 \geq 0 \rightarrow y^2 + 2y + 33 \geq 0$ $\frac{1}{+1} - \frac{1}{-1} \quad R = (-\infty, -4] \cup [2, +\infty)$	۲
$f(x) = \frac{x^2-n+1}{x^2-n+1} \quad x^2-n+1 \neq 0 \rightarrow D_f = R$ $y = \frac{x^2-n+1}{x^2-n+1} \rightarrow y(x^2-n+1) = x^2-n+1 \rightarrow x^2(1-y) + n(y-1) + 1-y = 0$ $(y-1)x^2 - (y-1)(n+1) = 0 \rightarrow (y-1)(x^2 - n - 1) = 0$ $\frac{1}{+1} - \frac{1}{-1} \quad R_f = [0, 1]$	۳
$y = \sqrt{x^2-n}$ $x_{min} = \frac{-b}{2a} = \frac{n}{2} = 2$ $y_{min} = -1 \rightarrow \sqrt{-1} = -1$ $R = [-1, +\infty)$ $\left\{ \begin{array}{l} x_{max} = \frac{-b}{2a} = \frac{f}{-2} = 2 \\ y_{max} = 3 \quad R_y = \sqrt{(-\infty, 3]} = [-1, 3] \end{array} \right.$	۴
$y = \log \frac{x^2+1}{x}$ $x + \frac{1}{x} \rightarrow (-\infty, -1] \cup [1, +\infty)$ $\frac{x}{x} = [1, +\infty)$ $\rightarrow R = [1, +\infty)$ $\left\{ \begin{array}{l} y = \log(x^2-x+1) \\ R_y = (-\infty, +\infty) = \mathbb{R} \end{array} \right.$	۵

$y = \begin{cases} 2x-2 & x > 1 \\ 1 & 1/2 \leq x \leq 1 \\ -2x+2 & x < 1/2 \end{cases}$  $R_y = [-1, +\infty)$	$y = \begin{cases} x+1 & x > 1 \\ 2x-1 & 1/2 \leq x \leq 1 \\ -x-1 & x < 1/2 \end{cases}$  $R_y = [-1, +\infty)$	6
$\begin{cases} -x-1 & x > 1 \\ -x & 1/2 \leq x \leq 1 \\ x+1 & x < 1/2 \end{cases}$ $\begin{cases} -x-1 < 1 \rightarrow -x < 2 \rightarrow x > -2 \\ -x < 1 \rightarrow x > -1 \\ x+1 < 1 \rightarrow x < 0 \end{cases}$ $\bigcup (-\infty, -2) \cup [-1, +\infty)$		7
$\begin{cases} 2x-1 & x > 1/2 \\ -1 & 1/4 \leq x \leq 1/2 \\ x+1 & x < 1/4 \end{cases}$  $R_y = \mathbb{R}$		8
$\begin{cases} x < -1 \rightarrow y = 2x+2 \\ -1/2 \leq x < 1 \rightarrow y = 2x+1 \\ 1/2 \leq x < 1 \rightarrow y = -2x \\ 1 \leq x < 2 \rightarrow y = 2x-1 \\ x \geq 2 \rightarrow y = 1 \end{cases}$  $R = [-1, \infty)$	$[x] + [x] \begin{cases} x \in \mathbb{Z} \rightarrow y = 2 \\ x \in \mathbb{R} \setminus \mathbb{Z} \rightarrow -1 \rightarrow y = 1 \end{cases}$ 	9
$y = \sin^2 x + \sin^2 x + 1$ $\begin{cases} \sin^2 x = \frac{1}{4} \rightarrow y = \frac{1}{2} \\ \sin^2 x = 0 \rightarrow y = 1 \text{ min} \\ \sin^2 x = 1 \rightarrow y = 2 \text{ max} \end{cases}$ $R = [1, 2]$	$y = \sin^2 x - \sin^2 x$ $\begin{cases} \sin^2 x = \frac{1}{4} \rightarrow y = \frac{3}{4} \text{ min} \\ \sin^2 x = 1 \rightarrow y = 2 \text{ max} \\ \sin^2 x = 0 \rightarrow y = 1 \end{cases}$ $R = [\frac{3}{4}, 2]$	10