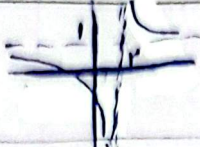
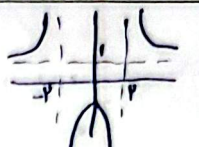


الف) $y = \frac{n+1}{n-1}$  $y = \frac{|n|+1}{|n|-1}$  $(-\frac{1}{2}, 0)$

ب) $\frac{n^2+1}{|n|} = \frac{|n|^2+1}{|n|} = |n| + \frac{1}{|n|}$ $R = (-\infty, -\frac{1}{2}] \cup (1, +\infty)$ ۱

جمع عدد با معکوسش در حالت مثبت $R = [2, +\infty)$

$y = \frac{n^2+1}{n+3} \Rightarrow yn + 3y = n^2+1 \Rightarrow n^2 + (1-y)n - (1+3y) = 0$

$n = \frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow \Delta \geq 0 \Rightarrow 1+y^2-4y+1+12y \geq 0 \Rightarrow y^2+8y+2 \geq 0$
 $(y+9)(y+2) \geq 0$

$\frac{-9-2}{+6-2} \quad R = (-\infty, -9] \cup [-2, +\infty)$

$D = \mathbb{R} \quad n^2-n+1=0 \rightarrow \Delta < 0$

$y = \frac{n^2-n+1}{n^2-n+1} \Rightarrow yn^2-ny+y = n^2-n+\frac{1}{y} \Rightarrow (y-1)n^2 + (1-y)n + y - \frac{1}{y} = 0$

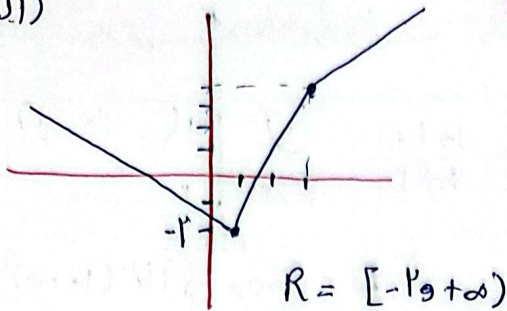
$\Delta \geq 0 \Rightarrow y^2+1-2y - (1+y)(y-\frac{1}{y}) \geq 0 \quad y \neq 1 \Rightarrow R = [0, 1)$

الف) $n_5 = 1 \rightarrow y_5 = 3 \quad (\text{رو به بالا}) \rightarrow R = [0, \sqrt{3}]$

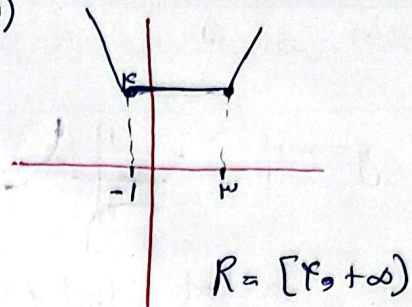
ب) $n_5 = 1 \rightarrow y_5 = -1 \rightarrow R = [-2, +\infty)$
 (رو به بالا)

الف) $n^2-n+1 \rightarrow$ هر مقادیری می تواند بدهد $R = \mathbb{R}$ $\downarrow$ $R_f = \mathbb{R}$ $\log$ $R_f = [1, +\infty)$ ۵

ا))



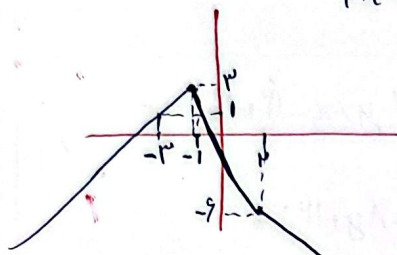
ب))



6

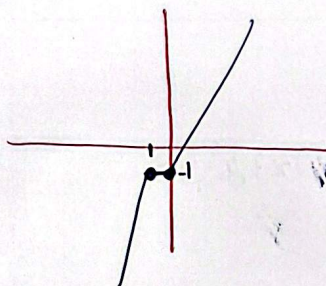
$$|n-1| - |n+1| = 1$$

$$\Rightarrow \begin{cases} -x+1-n-1=1 \Rightarrow x=-\frac{1}{n} \\ -x+1+n+1=1 \Rightarrow x=-3 \end{cases}$$



$$x = (-\infty, -3] \cup [-\frac{1}{n}, +\infty)$$

7

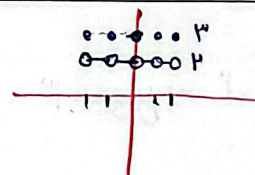


$$R = \mathbb{R}$$

8

ا)) $y = \underbrace{[n] + [-n]}_{\substack{n \in \mathbb{Z} \rightarrow 0 \\ n \notin \mathbb{Z} \rightarrow -1}} + 1$

$$R = \{1, 3\}$$



9

ب))



ا)) $\sin n = -1 \rightarrow 3$ $-1 \leq \sin n \leq 1$
 $\sin n = 1 \rightarrow 1$
 $\sin n = \frac{b}{Pa} = \frac{1}{P} \rightarrow \frac{P}{P}$

$$R = [\frac{P}{P}, 3]$$

10

ب) $\sin n = 0 \rightarrow 1$ $0 \leq \sin^2 n \leq 1$
 $\sin n = 1 \rightarrow 3$
 $\sin n = \frac{b}{Pa} = -\frac{1}{P} \times$

$$R = [1, 3]$$