

الف) $y = \frac{n+1}{n-1}$

$y = \frac{|n|+1}{|n|-1}$

ب) $\frac{n^2+1}{|n|} = \frac{|n|^2+1}{|n|} = |n| + \frac{1}{|n|}$

$R = (-\infty, -\frac{1}{p}] \cup (1, +\infty)$

جمع عدد با معکوسش در حالت مثبت $R = [1, +\infty)$

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

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

$\frac{-1/2 - 1/2}{+1/4 - 1/4} \quad R = (-\infty, -1] \cup [1, +\infty)$

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

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

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

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

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

الف) $n^2 - n + 1 \rightarrow$ هر مقادیری می تواند بدود

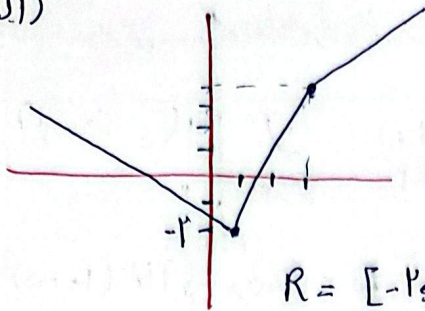
$R = \mathbb{R}$

$R_f = \mathbb{R}$

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

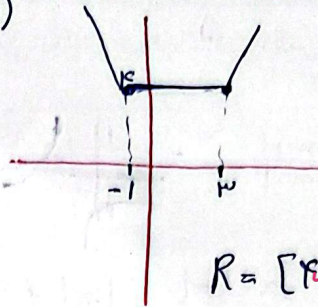
$\log \rightarrow R_f = [1, +\infty)$

ا))



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

ب))



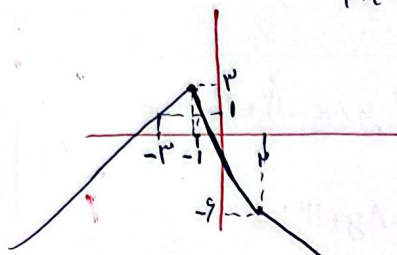
$$R = [1, +\infty)$$

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

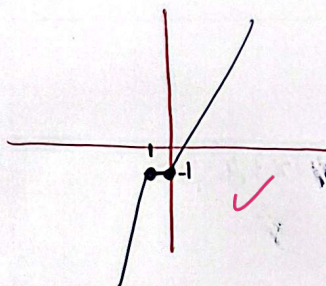
$$\Rightarrow \begin{cases} -n+1-n-1=1 \Rightarrow n=-\frac{1}{2} \\ -n+1+n+1=1 \Rightarrow n=-1 \end{cases}$$



$$R = (-\infty, -1] \cup [-\frac{1}{2}, +\infty)$$

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$$R = \mathbb{R}$$

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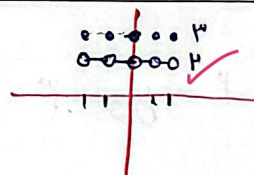
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$$a)) y = [n] + [-n] + 1$$

$$n \in \mathbb{Z} \rightarrow 0$$

$$n \notin \mathbb{Z} \rightarrow -1$$

$$R = \{1, 0\}$$



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ب))



$$a)) \sin n = -1 \rightarrow \pi \quad -1 \leq \sin n \leq 1$$

$$\sin n = 1 \rightarrow 1$$

$$\sin n = \frac{b}{a} = \frac{1}{2} \rightarrow \frac{\pi}{6}$$

$$R = [\frac{\pi}{6}, \pi]$$

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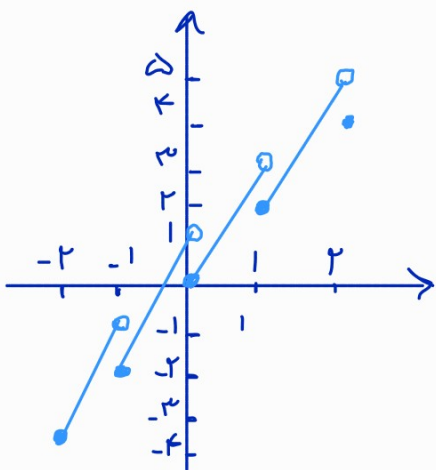
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$$b)) \sin n = 0 \rightarrow 1 \quad 0 \leq \sin^2 n \leq 1$$

$$\sin n = 1 \rightarrow \pi$$

$$\sin n = \frac{b}{a} = -\frac{1}{2} \rightarrow \frac{3\pi}{2}$$

$$R = [1, \pi]$$



$$R_y = [-1, \infty)$$