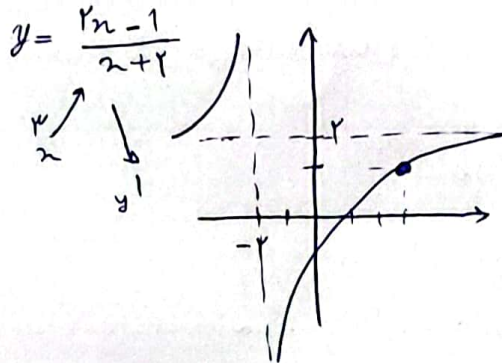
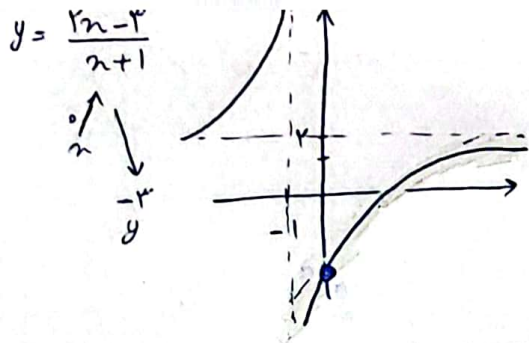




6

الف $\sin n + \frac{1}{\sin n} \rightarrow \sin n$ می‌تونه ± 1 باشه $\Rightarrow (-\infty, -2] \cup [2, +\infty) \quad R_f =$

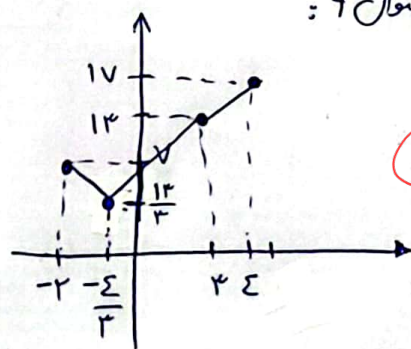
ب $n^3 + \frac{1}{n^3} \rightarrow n^3$ می‌تونه ± 1 باشه $\Rightarrow (-\infty, -2] \cup [2, +\infty) \quad R_f =$

ج $\sqrt[3]{n} + \frac{1}{\sqrt[3]{n}} \rightarrow \sqrt[3]{n}$ می‌تونه ± 1 باشه $\Rightarrow (-\infty, -2] \cup [2, +\infty) = R_f$

د $\sqrt{n} + \frac{1}{\sqrt{n}} \rightarrow \sqrt{n} \geq 0$ $\Rightarrow R_f = [2, +\infty)$

7

$$\begin{cases} n-3+3n+\varepsilon & n > 3 \\ -n+3+3n+\varepsilon & -\frac{\varepsilon}{3} \leq n \leq 3 \\ -n+3-3n-\varepsilon & n < -\frac{\varepsilon}{3} \end{cases} \Rightarrow \begin{cases} 4n+1 & n > 3 \\ 2n+7 & -\frac{\varepsilon}{3} \leq n \leq 3 \\ -\varepsilon n-1 & n < -\frac{\varepsilon}{3} \end{cases}$$



سوال 9:

$R_f = [\frac{14}{3}, +\infty)$

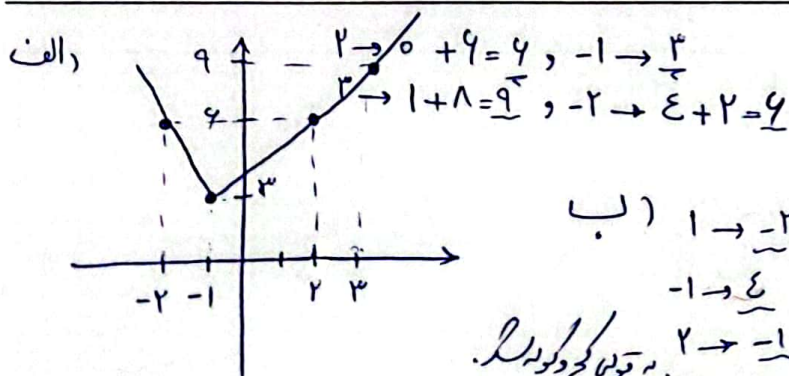
$\frac{14}{3} - \frac{1}{3} = \frac{13}{3} \quad \neq 1-1$

8

الف $n^2 + \frac{1}{n^2+4} \rightarrow n^2 \geq 0 \quad \min \Rightarrow 0 + \frac{1}{0+4} = \frac{1}{4} \quad [\frac{1}{4}, +\infty) = R_f$

ب $\frac{n^2+\Delta}{\sqrt{n^2+\varepsilon}} \rightarrow n^2 \geq 0 \quad \min \Rightarrow \frac{0+\Delta}{\sqrt{0+\varepsilon}} = \frac{\Delta}{\sqrt{\varepsilon}} \quad [\frac{\Delta}{\sqrt{\varepsilon}}, +\infty) = R_f$

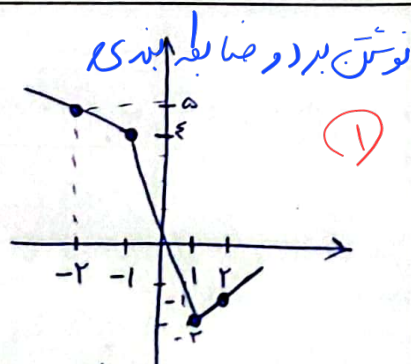
9



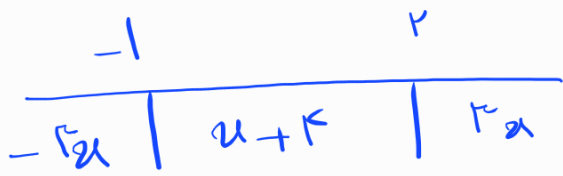
ب

$1 \rightarrow -2,$
 $-1 \rightarrow \underline{\varepsilon}$
 $2 \rightarrow -1$
 $3 \rightarrow \underline{\Delta}$

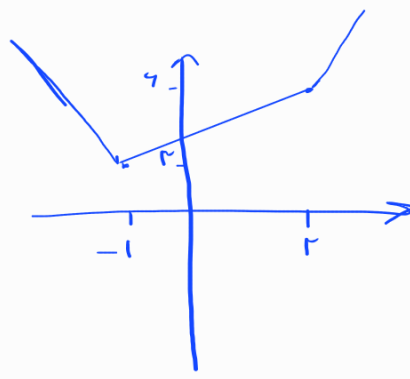
مقیاس کج و کورده



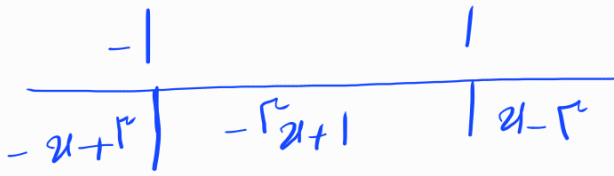
10



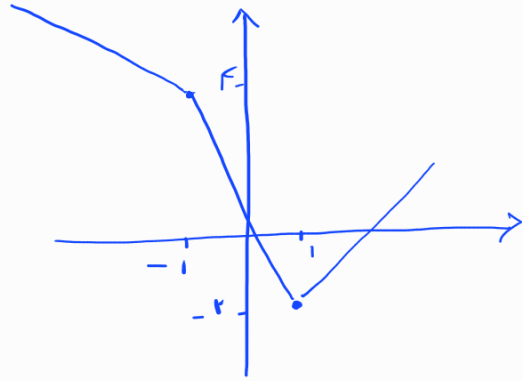
$$R = [r, +\infty)$$



1. a)



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



1. b)