

الف) $y = \frac{|n|+1}{|n|-1}$ $\xrightarrow{\max=+\infty} \frac{\infty+1}{\infty-1} = 1$ $\xrightarrow{\min=0} \frac{0+1}{0-1} = -1$ $\xrightarrow{\text{مخرج نمی شود}} R = (-\infty -1] \cup (1 + \infty)$

ب) $y = \frac{x^r+1}{|x|} = \frac{|x|^r+1}{|x|} = |x| + \frac{1}{|x|} \rightarrow R = [r + \infty)$

$y = \frac{x^r+xn-r}{n+r} = \frac{x^r+xn-r+1}{n+r} = \frac{(x+r)(n-1)+1}{n+r} = x-1 + \frac{1}{n+r} = x+r + \frac{1}{n+r} - \varepsilon$

$\rightarrow R = (-\infty -r] \cup [r + \infty) - \varepsilon \rightarrow R = (-\infty -r] \cup [r + \infty)$

$f(n) = \frac{x^r-n+\frac{1}{\varepsilon}}{x^r-n+1} = \frac{t+\frac{1}{\varepsilon}}{t+1}$ $\xrightarrow{\max=+\infty} \frac{\infty+\frac{1}{\varepsilon}}{\infty+1} = 1$ $\xrightarrow{\min=-\frac{1}{\varepsilon}} \frac{-\frac{1}{\varepsilon}+\frac{1}{\varepsilon}}{-\frac{1}{\varepsilon}+1} = \text{مخرج نمی شود}$ $\rightarrow [0 + 1)$

الف) $y = \sqrt{x^r+\varepsilon n-1}$ $\rightarrow \sqrt{(-\infty r]} \rightarrow R = [0 \sqrt{r}]$
 ب) $y = \sqrt[r]{x^r-n}$ $\rightarrow \sqrt[r]{[-1 + \infty)} \rightarrow R = [-r + \infty)$

الف) $y = \log x^r-n+n$ $\xrightarrow{x^r-n+1 \rightarrow \mathbb{R}} \log \mathbb{R} \rightarrow R = \mathbb{R}$
 ب) $y = \log_r \frac{x^r+1}{n} = \log_r x + \frac{1}{n}$ $\xrightarrow{\frac{x+1}{n} \geq r} \log_r \frac{1}{r} \leq -r$ $\xrightarrow{\frac{x+1}{n} \leq -r} \log_r \frac{1}{-r} \geq r$ $\rightarrow R = [1 + \infty)$

الف) $y = |x-r| - |x-r|$ $\rightarrow R = [-r + \infty)$
 ب) $y = |x-r| + |n+1|$ $\rightarrow R = [r + \infty)$

$|n-r| - |x-r| \leq 1$ $\rightarrow (-\infty -r] \cup [-\frac{1}{r} + \infty)$

$y = x^n - |x+1| + |x|$ $\rightarrow R = \mathbb{R}$

الف) $[n] + [r-n] = [n] + [-n] + r$ $\rightarrow R = \{r, r\}$

ب) $y = x^n - [n]$ $\rightarrow R = \mathbb{R}$

الف) $y = \sin^p x - \sin x + 1$ $\left(\begin{array}{l} \text{max} = 1 \\ \text{min} = -1 \\ -\frac{b}{Pa} = \frac{1}{P} \end{array} \right. \left. \begin{array}{l} P \\ P \end{array} \right) \rightarrow IR = \left[\frac{P}{E} \quad P \right]$ 10

ب) $\sin^P + \sin^P x + 1$ $\left(\begin{array}{l} \text{max} = 2 \\ \text{min} = 0 \\ -\frac{b}{Pa} = -\frac{1}{P} \end{array} \right. \left. \begin{array}{l} P \\ 1 \\ \text{و ج ع X} \end{array} \right) \rightarrow IR = [1 \quad P]$ 16