

$$\begin{aligned} f(-n) + n f(n) &= 2|n| + 1 \\ f(n) + n f(-n) &= 2|n| + 1 \end{aligned}$$

$$f(n) = \frac{|n|(n-2) + n - 1}{n^2 - 1}$$

$$n^2 f(n) + n f(-n) = n(2|n| + 1)$$

$$f(n) = \frac{2|n|(n-1) + (n-1)}{n^2 - 1}$$

$$(f(n) + n f(-n)) \times -1$$

$$f(n) = \frac{(n-1)(2|n| + 1)}{n^2 - 1}$$

$$n^2 f(n) - f(n) = |n||n| + n - 2|n| - 1$$

$$f(n) + f(0) = n^2 - 2n + 4$$

$$n=0 \rightarrow 2 f(0) = 4 \rightarrow f(0) = 2$$

$$f(n) + 2 = n^2 - 2n + 4 \rightarrow f(n) = n^2 - 2n + 2$$

$$f(n^2) = (n^2)^2 - 2(n^2) + 2 = n^4 - 2n^2 + 2$$

$$y = \frac{n^2 + n + 2}{n - 1} \rightarrow y n - y = n^2 + n + 2 \rightarrow n^2 + n - y n + 2 + y = 0$$

$$\rightarrow n^2 + (1-y)n + 2+y = 0$$

$$n = \frac{-1+y \pm \sqrt{(1-y)^2 - 4(2+y)}}{2} \rightarrow (1-y)^2 - 4(2+y) \geq 0 \rightarrow 1 - 2y + y^2 - 8 - 4y \geq 0$$

$$\rightarrow y^2 - 6y - 7 \geq 0 \rightarrow y \in (-1, 7) \Rightarrow R = \mathbb{R} - (-1, 7)$$

$$\text{الف) } \frac{-b}{pa} = \frac{-(-\omega)}{2 \times 2} = \frac{\omega}{2}$$

$$\text{ب) } \frac{-b}{pa} = 2 \rightarrow -4 + 11 - \omega = 2$$

$$\text{ج) } \frac{-b}{pa} = 2 \rightarrow -4 + 11 - \omega = 2 \Rightarrow R = \mathbb{R}$$

$$n = \frac{\omega}{2} \rightarrow 2 \left(\frac{\omega}{2} \right)^2 - \omega \left(\frac{\omega}{2} \right) + 1 = 0$$

$$2 \times \frac{\omega^2}{4} - \frac{\omega^2}{2} + 1 = \frac{11}{\omega}$$

$$R = \left[\frac{11}{\omega}, +\infty \right)$$

$$\text{د) } y = \log(n^2 - 4n^2 + 6n + 2)$$

$$\text{ه) } \frac{-b}{pa} = 2 \rightarrow -4 + 11 - \omega = 2 \Rightarrow R = \mathbb{R}$$

$$\text{الف) } 2x - 4 \neq 1 \times 2$$

$$R = \mathbb{R} - \left\{ \frac{5}{2} \right\}$$

$$\text{ب) } \frac{2x+3}{\sqrt{2x+3}} + \frac{1}{\sqrt{2x+3}} = \frac{a+1}{a} \quad R: \left[\frac{5\sqrt{2}}{2}, +\infty \right)$$

$$\text{ج) } \frac{2x+3}{\sqrt{2x+3}} + \frac{1}{\sqrt{2x+3}} = \frac{a+1}{a} \rightarrow \sqrt{2x+3} + \frac{1}{\sqrt{2x+3}} = \frac{a+1}{a}$$

$$\text{د) } 2x+3 + \frac{1}{2x+3} - \varepsilon = a + \frac{1}{a} - \varepsilon \rightarrow a + \frac{1}{a} - \varepsilon = \frac{5\sqrt{2}}{2}$$

$$\text{ه) } 2x+3 + \frac{1}{2x+3} - \varepsilon = a + \frac{1}{a} - \varepsilon \rightarrow a + \frac{1}{a} - \varepsilon = \frac{5\sqrt{2}}{2} \quad R: \left[\frac{11}{2}, +\infty \right)$$

$$\text{الف) } -2x \neq 1 \times 1$$

$$R = \sqrt{\mathbb{R} - \{ \varepsilon \}} = [1, +\infty) - \{ \varepsilon \}$$

$$n^r + \varepsilon = y n^r - y \rightarrow n^r = \frac{y + \varepsilon}{y - 1} \rightarrow n = \sqrt{\frac{y + \varepsilon}{y - 1}}$$

$$\frac{y}{1 + \frac{-\varepsilon}{1 - \frac{1}{y}} + 1}$$

$$\frac{n^r + \varepsilon}{n^r - 1} = \frac{n^r + \varepsilon}{1 - 1} \xrightarrow{n^r = 1} \frac{n^r + \varepsilon}{1 - 1} = \frac{\varepsilon}{-1} = -\varepsilon$$

$$\xrightarrow{n^r = +\infty} \frac{n^r + \varepsilon}{1 - 1} = 1$$

$$\bullet \leq n^r < +\infty$$

$$R = \mathbb{R} - (-\varepsilon, 1]$$

$$n = \pm 1 \rightarrow n^r - 1 = 0 \rightarrow \text{خرج صفر شد} \rightarrow R = \mathbb{R} - (-\varepsilon, 1]$$

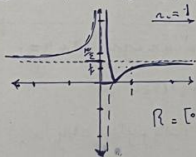
$$\frac{1 \sin n + \varepsilon}{\sin n - 1} = \frac{1 + \varepsilon}{1 - 1} \xrightarrow{\sin n = -1} \frac{-1 + \varepsilon}{-1 - 1} = \frac{-1 + \varepsilon}{-2} = \frac{-1}{2}$$

$$\xrightarrow{\sin n = 1} \frac{1 + \varepsilon}{1 - 1} = \frac{1}{-2} = -\frac{1}{2}$$

$$-1 \leq \sin n \leq 1$$

$$\sin n = 1 \rightarrow \text{خرج} = 0 \Rightarrow \text{خرج صفر شد} \Rightarrow R = [-\frac{1}{2}, \frac{1}{2}]$$

$$\text{الف) } \frac{1}{x} \text{ جنبه افقی} = \frac{1}{x} \quad \text{جنبه عمودی} = 0 \quad n=1 \quad f(n) = \frac{1}{1}$$



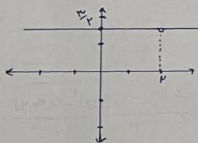
$$R = [0, +\infty)$$

$$\square \quad y = \sqrt{\frac{9x - 18}{-1 + 2x}} = \sqrt{\frac{9x - 18}{2x - 1}}$$

$$9x - 18 = \varepsilon x - 18$$

$$y = \frac{1}{1} \sqrt{\frac{(x-2)}{(x-2)}}$$

$$R = \left\{ \frac{1}{1} \right\}$$

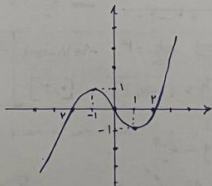


$$y = n |n| - n$$

$$R = \mathbb{R}$$

$$n \geq 0 \rightarrow n^r - n$$

$$n \leq 0 \rightarrow -n^r - n$$

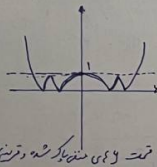
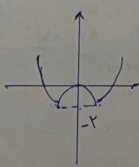
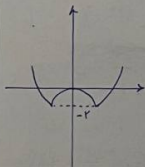


$$f(n)$$

$$f(|n|) \text{ (بدون علامه)}$$

$$f(|n|) + 1 \text{ (بدون علامه)}$$

$$|f(n) + 1|$$



نقطه 0 و 1 مستطابق شده و قرینه شده