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$$\begin{cases} f(-x) - xf(x) = 2|x| + 1 \\ f(x) + xf(-x) = 2|-x| + 1 \end{cases} \xrightarrow{x \neq 0} \begin{cases} -xf(-x) + x^2 f(x) = -x(2|x| + 1) \\ f(x) + xf(-x) = 2|x| + 1 \end{cases} \quad (2)$$

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

$$f(x) = \frac{(1-x)(2|x| + 1)}{1+x^2} \quad (3)$$

$$x=0: f(0) + f(0) = 2 \cdot 0 + 1 \rightarrow 2f(0) = 1 \rightarrow f(0) = \frac{1}{2} \quad (2)$$

$$f(x^2) + f(0) = (x^2)^2 - 2(x^2) + 1 \rightarrow f(x^2) = x^4 - 2x^2 + 1 \quad (3)$$

$$y(x-1) = x^2 + x + 1 \rightarrow x^2 + (1-y)x + (1+y) = 0, \Delta = (1-y)^2 - 4(1+y) \geq 0 \rightarrow (y-5)(y+1) \geq 0 \quad (2)$$

$$\Delta \geq 0 \rightarrow \Delta = 1 + y^2 - 2y - 4 - 4y = y^2 - 4y - 3 \geq 0 \rightarrow (y-5)(y+1) \geq 0$$

$$\rightarrow R = (-\infty, -1] \cup [5, +\infty) \quad (2)$$

$$\text{الف) } \text{ent} \left| \begin{aligned} -\frac{b}{2a} &= \frac{0}{2} = 0 \\ y &= 2\left(\frac{0}{2}\right) - \frac{0}{2} + 1 = -\frac{0}{2} + 1 = 1 \end{aligned} \right. \quad \text{وقتاً!} \quad (1, 0.5)$$

$$R = \left[\frac{-1}{2}, +\infty \right)$$

$$\text{ب) } \text{ent} \left| \begin{aligned} -\frac{b}{2a} &= -\frac{4}{2} = -2 \\ y &= -2 + 1 - 0 = -1 \end{aligned} \right. \quad R = [-\infty, 2] \quad R_{\text{الحل}} = [0, 2] \quad (2)$$

$$\text{ج) } y = \sqrt{x^2 - 2x^2 + 2x + 1} \rightarrow R_y = [0, +\infty) \quad R = \mathbb{R}$$

$$\text{د) } y = \log(x^2 - 4x^2 + 2x + 1) \rightarrow R_y = \mathbb{R}$$

$$\text{هـ) } R = \mathbb{R} - \left\{ \frac{a}{c} \right\} = \mathbb{R} - \left\{ \frac{0}{2} \right\} = \mathbb{R} \quad (2)$$

$$\text{و) } \frac{f(n+1)}{n-2} \rightarrow R = \mathbb{R} - \{2\} \rightarrow R_y = [0, +\infty) - \{2\} \quad (2)$$

$$\text{ز) } y = \frac{x^2 + 1}{\sqrt{x^2 + 1}} = \sqrt{x^2 + 1} + \frac{1}{\sqrt{x^2 + 1}} \rightarrow R = \left[\sqrt{1} + \frac{1}{\sqrt{1}}, +\infty \right) = \left[\frac{5}{2}, +\infty \right)$$

لا بد من 9 + 12 = 21

Arman

د) $y = \frac{n^r + e + 1}{n^r + e} - e$ $R = [e + 1 - e, +\infty) = [1, +\infty)$
 شرط: $-1 + e, e$

رأی: $\frac{n^r + \infty}{n^r} y = e$ $n^r - 1 = 0 \rightarrow n^r = 1 \rightarrow n = \pm 1$ $R = [-\infty, -1] \cup (1, +\infty)$

روش: $yn^r - y = rn^r + e \rightarrow (y-r)n^r = y + e \rightarrow n^r = \frac{y+e}{y-r}$ $\frac{n^r}{y-r} = \frac{y+e}{y-r}$

$\frac{-e}{+e - y} R = (-\infty, -e] \cup (e, +\infty)$

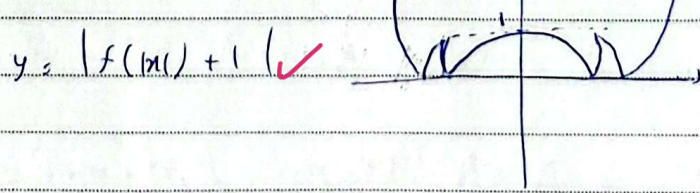
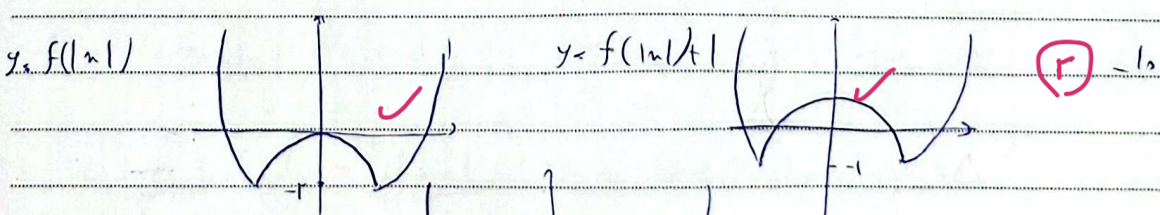
$\sin n^r - 1$ $f(n) = \frac{y+e}{-1-r} = \frac{y}{-r} = -\frac{1}{r}$ $\sin n^r - 1 \rightarrow \sin n^r$ غ.م.ن

$\sin n^r$ $f(n) = \frac{y+e}{1-r} = \frac{y}{-r} = -r$ $R = [-\frac{1}{r}, -r]$ $[-r, -\frac{1}{r}]$

الف) $y = \frac{r^n - 1}{r^n} \rightarrow R = \{\frac{r}{e}\}$ $y = \left| \frac{r^n - 1}{r^n} \right| \rightarrow R = [0, +\infty)$

ج) $y = \sqrt{\frac{q(n-r)}{f(n-r)}} \xrightarrow{n \neq r} y = \sqrt{\frac{q}{f}} = \frac{r}{f}$ $R = \{\frac{r}{f}\}$ صغری بعد و بخور

$n > 0 \rightarrow \ln / s \rightarrow y = n^r - n - ent \left| \frac{-b}{ra} = 1 \right|$ $R = \mathbb{R}$
 $n < 0 \rightarrow \ln / s \rightarrow y = -n^r - n$ $ent \left| \frac{-b}{ra} = -1 \right|$



۸- اول برد عبارت داخل قدر مطلق

$$R_y = \left| 1R - \left\{ \frac{3}{4} \right\} \right| = [0 + \infty)$$

رد حساب می کنیم بعد قدر مطلق می گیریم

فقط خواست باشد که $y = \frac{3}{4}$ هم هست داخل برد

$$y = -\frac{3}{4} \text{ عضو برد عبارت داخل قدر مطلق هست و وقتی قدر مطلق بگیریم } y = \frac{3}{4}$$

روید بهمونت