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بارسا حاتیری تالیف ۲ ریاضی و حساب

$$1- \begin{cases} f(-n) - n f(n) = 2|n| + 1 \\ f(n) + n f(-n) = 2|-n| + 1 \end{cases} \Rightarrow \begin{cases} n f(-n) - n^2 f(n) = (2|n| + 1) n \\ \oplus - f(n) - n f(-n) = -(2|n| + 1) \end{cases}$$

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

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

$$2- \stackrel{n=0}{\Rightarrow} 2f(0) = 0 - 0 + 2 = 2 \Rightarrow f(0) = 1 \Rightarrow f(n) = n^2 - 2n + 1$$

$$\Rightarrow f(n^2) = n^4 - 2n^2 + 1$$

$$3- y n - y = n^2 + n + 2 \Rightarrow n^2 + (1-y)n + y + 2 = 0$$

$$\Rightarrow n = \frac{y-1 \pm \sqrt{y^2 - 2y + 1 - 4y - 8}}{2} = \frac{y-1 \pm \sqrt{y^2 - 6y - 7}}{2}$$

$$\Rightarrow R_y = (-\infty, -1] \cup [7, +\infty)$$

$y^2 - 6y - 7 \geq 0 \Rightarrow (y+1)(y-7) \geq 0$

$$4- \text{الف) } y = 2n^2 - 3n + 1 \rightarrow y_s = 2x \frac{2d}{dx} - 3x \frac{d}{dx} + 1 = \frac{-2d}{dx} + 1 = \frac{-1v}{\lambda}$$

$$R_y = \left[\frac{-1v}{\lambda}, +\infty \right)$$

$$\text{ب) } y = \sqrt{-n^2 + 6n - 5} \Rightarrow y = \sqrt{-n^2 + 6n - 9 + 4} \Rightarrow y = \sqrt{-(n-3)^2 + 4}$$

$$\Rightarrow \text{if: } A = -(n-3)^2 + 4 \Rightarrow R_A = (-\infty, 4] \Rightarrow R_y = [0, 2]$$

$$\text{ج) } y = \sqrt{n^2 - 2n^2 + 4n + 1} \Rightarrow \text{if: } A = n^2 - 2n^2 + 4n + 1 \Rightarrow R_A = \mathbb{R}$$

$$\Rightarrow R_y = [0, +\infty)$$

$$\text{د) } y = \log \left(\frac{n^2 - 4n^2 + 6n + 1}{n^2} \right) = A \Rightarrow A > 0$$

$$\Rightarrow R_y = (-\infty, +\infty) = \mathbb{R}$$

$$5- \text{ا) } y = \frac{2n+1}{2n-5} \Rightarrow R_y = \mathbb{R} - \left\{ \frac{5}{2} \right\} \quad (\text{مستقر آتیست})$$

$$\text{ب) } y = \sqrt{\frac{2n+1}{n-2}} = A \Rightarrow R_A = \mathbb{R} - \left\{ \frac{1}{2} \right\} \Rightarrow R_y = [0, +\infty) - \left\{ \frac{1}{2} \right\}$$

$$\text{ج) } y = \sqrt{n^2 + 4} + \frac{1}{\sqrt{n^2 + 4}} \Rightarrow y \geq \sqrt{4} + \frac{1}{\sqrt{4}} \Rightarrow y \geq \frac{5}{2}$$

$$\Rightarrow R_y = \left[\frac{5}{2}, +\infty \right)$$

$$\text{د) } y = n^2 + 4 + \frac{1}{n^2 + 4} - 4 \Rightarrow y \geq 4 + \frac{1}{4} - 4 \Rightarrow y \geq \frac{1}{4} \Rightarrow R_y = \left[\frac{1}{4}, +\infty \right)$$

بار اول جابجایی - تلفیق ۲ دوازدهم پسر

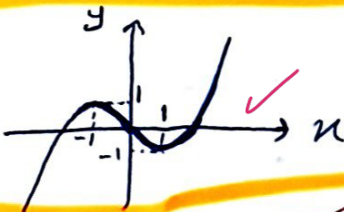
۶- روش اولی: $y = \frac{3x^2+2}{x^2-1} \Rightarrow yx^2 - y = 3x^2 + 2 \Rightarrow 3x^2 - yx^2 + 2 + y = 0$ (۲)
 $\Rightarrow (3-y)x^2 + y + 2 = 0 \Rightarrow x = \frac{0 \pm \sqrt{4(3-y)(y+2)}}{2(3-y)} \Rightarrow R_y = (-\infty, -2] \cup (3, +\infty)$
 $y \in (-\infty, -2] \cup (3, +\infty)$

روش دیگری: $\min x^2 = 0 \rightarrow y = \frac{2}{-1} = -2$
 $\max x^2 = +\infty \rightarrow y = \frac{3 \pm \sqrt{9-4(2+y)}}{2(3-y)} = 3$
 $R_y = (-\infty, -2] \cup (3, +\infty)$ معرجه را می توانه می تواند معرجه را

۷- $f(x) = \frac{2 \sin x + 1}{\sin x - 2}$ $\min \sin x = -1 \rightarrow f(x) = \frac{2}{-3} = -\frac{2}{3}$
 $\max \sin x = 1 \rightarrow f(x) = \frac{3}{-1} = -3$ معرجه می تواند معرجه را
 $R_f = [-3, -\frac{2}{3}]$

۸- الف) $y = \left| \frac{3x-1}{2x} \right|$
 $g(x) = \frac{3x-1}{2x} \Rightarrow R_g = \mathbb{R} - \left\{ \frac{1}{3} \right\}$
 $\Rightarrow R_y = [0, +\infty) - \left\{ \frac{1}{3} \right\}$ (۱, ۲, ۵)

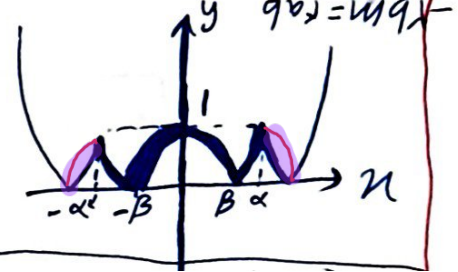
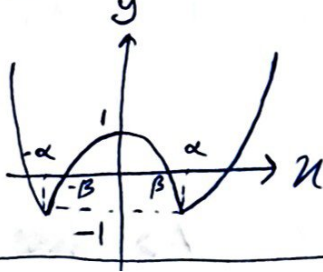
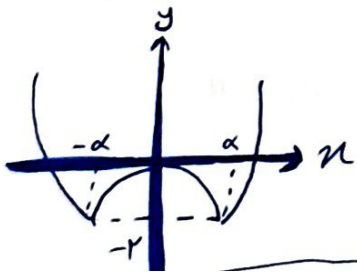
ب) $y = \sqrt{\frac{9(x-2)}{x(x-2)}} = \sqrt{\frac{9}{x}} = \frac{3}{\sqrt{x}} \Rightarrow R_y = \left\{ \frac{3}{\sqrt{x}} \right\}$

۹- $y = \begin{cases} x^2 - 2x & x \geq 0 \\ -x^2 - 2x & x < 0 \end{cases}$  $\Rightarrow R_y = \mathbb{R}$ (۲)

۱۰- $y = f(|x|)$

$y = f(|x|) + 1$ (۱, ۷, ۵)

$y = |f(|x|) + 1|$



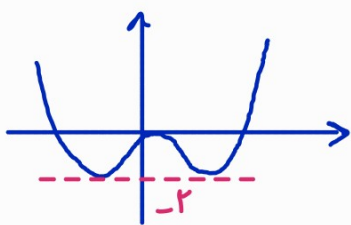
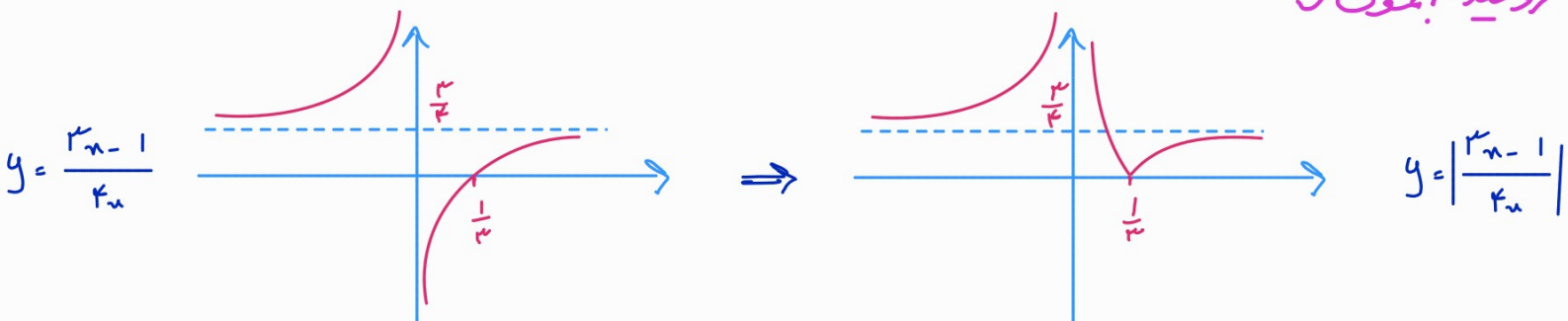
دقت!

۸- اول برد عبارت داخل قدر مطلق
 رد حساب می کنیم بعد قدر مطلق می گیریم

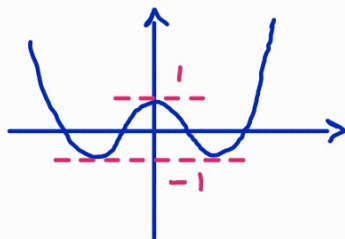
فقط خواست باشد که $y = \frac{3}{4}$ هم هست داخل برد

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

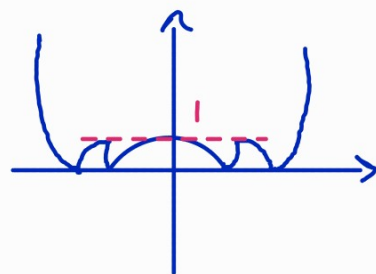
روید به صورت :



$$y = f(1-x)$$



$$y = f(|x|) + 1$$



$$y = |f(|x|) + 1|$$

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