

11, 17a

Subject:

مسابقات بین کتب

$$F(-n) - nF(n) \leq \sqrt{|n|} + 1$$

$$F(n) + nF(n) \leq \sqrt{|n|} + 1$$

$$nF(-n) - n^2F(n) \leq \sqrt{n^2} + n$$

$$F(n)(1+n^2) \leq \sqrt{|n|} + 1 - \sqrt{n^2} - n \Rightarrow F(n) \leq \frac{-\sqrt{n^2} + \sqrt{|n|} - n + 1}{n^2 + 1}$$

صفحه آخر...

$$F(n) + F(0) \leq n^2 - 3n + 4 \Rightarrow F(n) \leq n^2 - 3n + 4$$

$$4F(0) = 4 \Rightarrow F(0) = 1 \Rightarrow F(n^2) \leq n^4 - 3n^2 + 4$$

$$0 \leq y \leq n^2 + 1 \Rightarrow n^2 + n(1-y) + 2y \leq \dots \Rightarrow \frac{-(1-y) \pm \sqrt{(1-y)^2 - 4(y+1)}}{2} \quad (17)$$

$$(1-y)^2 - 4(y+1) \geq 0 \Rightarrow y^2 - 2y + 1 - 4y - 4 \geq 0 \Rightarrow y^2 - 6y - 3 \geq 0 \Rightarrow (y-3)(y+1) \geq 0$$

$$y \in (-\infty, -1] \cup [3, +\infty)$$

$$a) y \leq n^2 - 3n + 4 \Rightarrow \frac{-\Delta}{2a} \leq \frac{-(3n-4)}{2} \Rightarrow \frac{-1}{1} \Rightarrow \left[-\frac{1}{1}, +\infty\right) \quad (18)$$

$$b) \sqrt{-2y^2 + 3y - 4} \Rightarrow \frac{-\Delta}{2a} \leq \frac{-(3y-4)}{-2} \Rightarrow \sqrt{[-\infty, 4]} \Rightarrow [0, 4] \quad (19)$$

$$c) y \leq \sqrt{n^2 - 3n^2 + 4n + 1} \Rightarrow \sqrt{R} = [0, +\infty)$$

$$d) \log(n^2 - 3n^2 + 4n + 1) \Rightarrow R_y \leq R$$

$$a) y \leq \frac{n^2 + 1}{n^2 - 3} \Rightarrow n \leq \frac{-3y - 1}{2y - 3} \Rightarrow \frac{3y + 1}{2y - 3} \Rightarrow R_y \leq R - \left\{\frac{3}{2}\right\} \quad (20) (21)$$

$$b) y \leq \sqrt{\frac{n^2 + 1}{n^2 - 3}} \Rightarrow n \leq \frac{-3y - 1}{2y - 3} \Rightarrow \frac{3y + 1}{2y - 3} \Rightarrow R_y \leq [0, +\infty) - \left\{\frac{3}{2}\right\}$$

$$c) y \leq \frac{n^2 + 1}{\sqrt{n^2 + 3}} \Rightarrow \sqrt{n^2 + 3} \leq \frac{1}{\sqrt{n^2 + 3}} \Rightarrow \sqrt{3} + \frac{1}{\sqrt{3}} \leq \frac{n^2 + 1}{\sqrt{3}} \Rightarrow R_y = \left[\frac{4\sqrt{3}}{3}, +\infty\right)$$

IDEA

$$d) y \leq n^2 + \frac{1}{n^2 + 3} + t - t \Rightarrow n^2 + t + \frac{1}{n^2 + 3} - t \Rightarrow t + \frac{1}{t} \leq \frac{1}{t} - t = \frac{1}{t} \Rightarrow R_y \leq \left[\frac{1}{t}, +\infty\right)$$

Subject:

$$n! \sim \frac{y-f}{y-r} \sim \frac{y+f}{y-r} \Rightarrow n \sim \pm \sqrt{\frac{y+f}{y-r}} \quad \frac{-f \pm \sqrt{f^2 - (y-r)^2}}{y-r} \quad (1) \checkmark$$

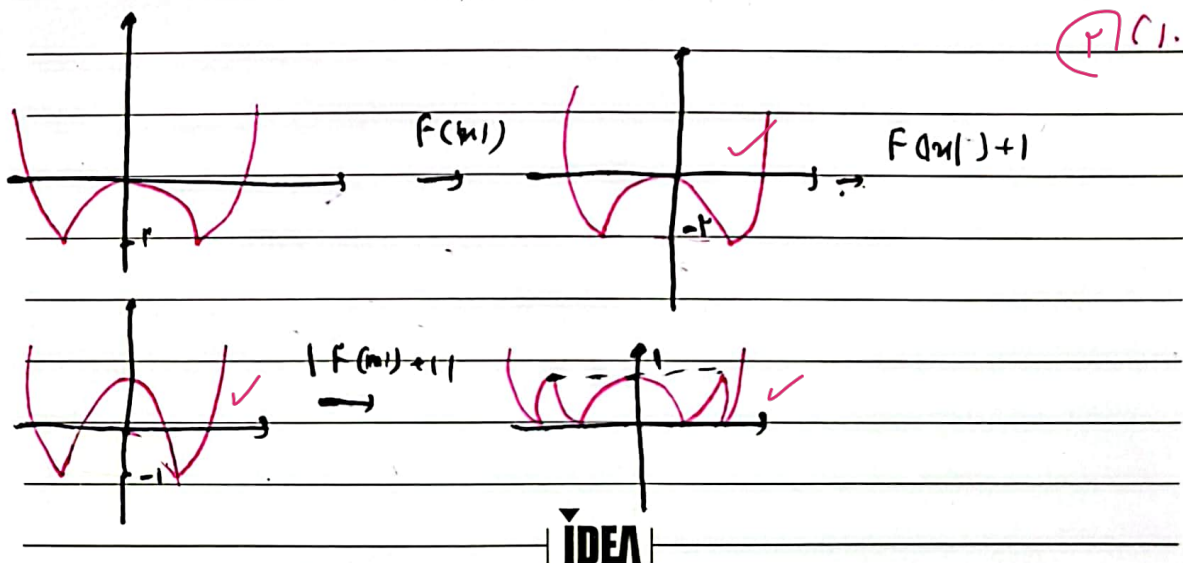
صفر بعد ... $\Rightarrow R_y \in (-\infty, -f] \cup [f, +\infty)$ $\checkmark$

$$\sin n \left\{ \begin{array}{l} \xrightarrow{m/n} \frac{y+f}{1-r} \sim \frac{y}{-r} \sim -n \\ \xrightarrow{m/n} -1 \rightarrow \frac{-r+f}{-f} \sim -\frac{r}{f} \sim -\frac{1}{f} \end{array} \right\} \quad [-f, -\frac{1}{f}] \quad (2) \checkmark$$

دالة $y \sim \left| \frac{m-1}{n} \right|$ $R_y \in [r, +\infty)$ $\checkmark$ (2) $\checkmark$

$$\sim y \sim \sqrt{\frac{9n-1}{-1+6n}} \sim \sqrt{\frac{9(n-r)}{f(n-r)}} \sim \frac{r}{f} \Rightarrow R_y \in \left[\frac{r}{f} \right] \checkmark$$

$y \sim n/n \sim r/n$
 $-n \sim r/n \sim n \sim r/n$ $R_y \in \mathbb{R}$ $\checkmark$ (2) $\checkmark$



۱- جای n ، $-n$ قرار می‌دهیم و یک دستگاه معادلات داریم:

$$\begin{aligned} f(-n) - n^r f(n) &= 2|n| + 1 \xrightarrow{\times n} \begin{cases} n f(-n) - n^{r+1} f(n) = 2n|n| + n & (I) \\ f(n) + n^r f(-n) = 2|n| + 1 & (II) \end{cases} \\ f(n) + n^r f(-n) &= 2|n| + 1 \end{aligned}$$

$$\underline{II - I} \rightarrow (1 + n^r) f(n) = 2(1 - n)|n| + 1 - n \Rightarrow f(n) = \frac{(1 - n)(2|n| + 1)}{1 + n^r}$$

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$$\text{از } \tilde{u}: \square = n^r \rightarrow \begin{cases} n^r = 0 \rightarrow y = -4 \\ n^r \sim \infty \rightarrow y = 3 \end{cases} \xrightarrow[\text{مقدار}]{\text{محدوده میوه}} R_y = (-\infty, -4] \cup (3, +\infty)$$