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امیر کرامت یا زینب

۱) $\sqrt{\frac{n-1}{n} - \frac{n}{n-1}} \geq 0 \Rightarrow \frac{(n-1)^2 - n^2}{n^2 - n} \geq 0$

no

$\Rightarrow \frac{n^2 - 1 - 2n - n^2}{n^2 - n} \geq 0$

no

بابت مرتب!

$Df = (-\infty, 0) \cup [\frac{1}{2}, +\infty)$

$R = \{0, -1\}$

$R = \{1, -2\}$

ب) $\frac{1}{n+1} - \frac{1}{n}$

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$\frac{1}{n-1} + \frac{1}{n+2}$

$n + \frac{2}{n}$

$R = \{0, -1, -2, -\frac{5}{2}\}$

$Df = R - (-\frac{5}{2}, \frac{5}{2})$

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$\sqrt{\frac{1}{x} - 1} \geq \frac{1}{x} + 1$

باید تنه عسلت کنی!

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۱) $\sqrt{x-1} + \sqrt{y+1} = 1 \Rightarrow \sqrt{y+1} = 1 - \sqrt{x-1} \Rightarrow y+1 = 1 - 2\sqrt{x-1} + x-1 \Rightarrow y = x - 2\sqrt{x-1}$

$(n^2 - n - 2) \Rightarrow n^2 - n - 2 > 0 \Rightarrow (n-2)(n+1) > 0 \Rightarrow n < -1 \text{ or } n > 2$

$\sqrt{n-1} + 1 = R = \{1\} \Rightarrow (-\infty, 1) \cup (2, +\infty)$

$f(n) = \sqrt{1+n-n^2} \Rightarrow n^2 - n - 1 \leq 0 \Rightarrow \frac{1 \pm \sqrt{5}}{2}$

$f(n) = \sqrt{-n^2 - \frac{1}{n} + 1} \Rightarrow -n^2 - \frac{1}{n} + 1 \geq 0 \Rightarrow n^3 + n - 1 \geq 0$

$g(n) = \sqrt{f(n) - n} \Rightarrow \text{if } n \geq 1, \sqrt{1-n-n^2} = \sqrt{1-n^2}$

$1-n^2 \geq 0 \Rightarrow n \leq 1 \Rightarrow [1, +\infty)$ if $n < 1, \sqrt{1-n-n^2} = \sqrt{1-n}$

$f\left(\sin \frac{\pi}{r} + \cos \pi\right) = f(n) \quad f\left(\frac{\sqrt{r}}{r}\right) = f\left(1 + \frac{\sqrt{r}}{r}\right) \approx$
 $\frac{\sqrt{r}}{r} - 1 \rightarrow \left[\frac{r + \sqrt{r}}{r}\right] \quad \downarrow \text{is odd}$
 $\approx \left(1 + \frac{\sqrt{r}}{r}\right) \quad \uparrow$

$$f(n) = r n^r - c n = r(n^r - r) \Rightarrow r \left[\left(1 + \frac{\sqrt{r}}{r}\right)^r - r \right] = r \left[1 + \frac{r}{r} + \frac{\sqrt{r}}{r} - r \right] = r \left[\frac{r}{r} - \frac{1}{r} \right]$$

$r_x(n-r)$
 $r(\sqrt{\frac{r}{r}}+1)(\sqrt{\frac{r}{r}}+1-r) =$
 $r(\frac{r}{r}-1) = -\frac{1}{r}$

$$\frac{\frac{a+1}{a-1} + \frac{a-1}{a-1}}{\frac{a+1}{a-1} - \frac{a-1}{a-1}} = a \Rightarrow \boxed{a \cdot \cancel{P-1}}$$

$f(g(n)) = -\epsilon$ $f(n) = -\epsilon$ $n^v - \epsilon n = -\epsilon \Rightarrow n^v - \epsilon n + \epsilon \Rightarrow (n - v)^v$ (1)
 $n = (v)$ $g(n) = v$ 1, v

$$\sqrt{n^2 - 1} = r \Rightarrow n^2 - 1 = r^2 \Rightarrow n^2 = r^2 + 1 \Rightarrow \boxed{n = \sqrt{r^2 + 1}} \quad \boxed{r = \sqrt{n^2 - 1}}$$

$$f(n+1) = n^2 - 2n + 4 \quad f(x) \times f(-x) = 9 \quad \forall \times \forall \quad \boxed{\text{F}}$$

$$\cancel{f(n+1)} = f(n) = 1 - \omega(1) + 4, f(n) = 24$$

$$f(\cos^y + \cos) = f(\cos^y + \cos) = \dots \quad \cos = n \quad \Rightarrow \quad n^y + n - 1 \quad \text{then } n = \dots$$

$$\cos \left[\frac{\pi}{4} \right] = \frac{1}{\sqrt{2}} \Rightarrow \left(\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}} \right) = \left(\frac{\pi}{4}, \frac{\pi}{4} \right)$$

الف ۱) $\frac{x-1}{x} - \frac{x}{x-1} \geq 0 \rightarrow \frac{x^2 - x_{n+1} - x^2}{x(x-1)} \geq 0 \rightarrow \frac{-x_{n+1}}{x(x-1)} \geq 0$

$\frac{1}{x} - \frac{1}{x-1} \rightarrow D_f = (-\infty, 0) \cup [\frac{1}{x}, 1)$

ب ۱) تمام ریشه های مخرج ها نباید در دامنه باشند!

$x+1 \neq 0 \rightarrow x \neq -1$ / $x \neq 0$ / $x-1 \neq 0 \rightarrow x \neq 1$

$x+2 \neq 0 \rightarrow x \neq -2$ / $\frac{x}{x-1} + \frac{1}{x+2} \neq 0 \rightarrow \frac{x_{n+2} + x - 1}{(x-1)(x+2)} \neq 0 \rightarrow x_{n+2} \neq 0 \rightarrow x \neq -\frac{2}{x}$

$D_f = \mathbb{R} - \{-1, 0, 1, -2, -\frac{2}{x}\}$

الف ۲) $((\frac{1}{x})^n - 9)(x^2 - \frac{5}{x}) \geq 0 \rightarrow \frac{-2}{x} - \frac{9}{x} \rightarrow D_f = (-\infty, -2] \cup [\frac{5}{x}, +\infty)$

$(\frac{1}{x})^n = 9 \rightarrow x = -2$ / $x^2 = \frac{5}{x} \rightarrow x = \frac{5}{x}$

ب ۲) $\sqrt{x-1} + \sqrt{y+1} = 3$, $\sqrt{y+1} = 3 - \sqrt{x-1} \rightarrow 3 - \sqrt{x-1} \geq 0 \rightarrow \sqrt{x-1} \leq 3 \rightarrow x \leq 10$

$x-1 \geq 0 \rightarrow x \geq 1$ I

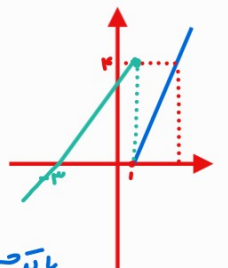
I, II $\rightarrow 1 \leq x \leq 10 \rightarrow D_f = [1, 10]$

$f(x) - x = \begin{cases} x_{n-2} - x - n & x \geq 1 \\ x_{n+3} - n & x < 1 \end{cases} = \begin{cases} x_{n-2} & x \geq 1 \\ x+3 & x < 1 \end{cases}$

$f(x) - x \geq 0 \rightarrow \begin{cases} x_{n-2} \geq 0 \rightarrow x \geq 1 \checkmark \\ x+3 \geq 0 \xrightarrow{x < 1} -3 \leq x < 1 \checkmark \end{cases}$

$\rightarrow D_f = [-3, +\infty)$

با توجه به شکل نیز مشخص است!



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

$$\sin \frac{\pi}{r} + \cos r\pi = \sqrt{\frac{r}{r}} + 1 \rightarrow f\left(\sqrt{\frac{r}{r}} + 1\right) = r\left(\sqrt{\frac{r}{r}} + 1 - 1\right)^2 - 2 = r\left(\frac{r}{r}\right) - 2 = -\frac{1}{r}$$

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$$f(\star) = -2 \rightarrow \star^2 - r\star = -2 \rightarrow (\star - r)^2 = 0 \rightarrow \star = r \checkmark$$

$$g(a) = r \rightarrow \sqrt{a^2 - 1} = r \rightarrow a^2 - 1 = r \rightarrow a^2 = r + 1 \rightarrow a = \pm \sqrt{r + 1}$$
