

Subject :

Year :

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درسها صادق زاده - دوازدهم، فصل 3

$$y = \sqrt{f(n) - n + 1}$$

$$f(n) = \begin{cases} 2n-1 & [n] > 2 \quad n \geq 5 \\ 2n+2 & [n] \leq 2 \quad n \leq 5 \end{cases} \quad \text{سوال 11}$$

$$\begin{aligned} \xrightarrow{n < 5} & \quad 2n+2 - n + 1 \leq 2n+2 > 0 \rightarrow n \geq -\frac{2}{2} \xrightarrow{\text{① و ②}} -\frac{2}{2} < n < 5 \\ \xrightarrow{n \geq 5} & \quad 2n-1 - n + 1 = n \geq 0 \xrightarrow{\text{① و ②}} n \geq 5 \\ \Rightarrow D_f &= [-\frac{2}{2}, +\infty) \end{aligned}$$

$$y = \frac{2 \cdot 2n^3 + 3 \cdot 4n^2 + 1 \cdot 1n + 2}{(2n+2)^2} = \frac{(2n+1)^3}{(2n+1)^2} = \frac{2n+1}{1} \quad \text{سوال 2}$$

$$D_f \subset \mathbb{R} - \{-\frac{1}{2}\}$$

$$f(n) = \begin{cases} \frac{(n^2-1)(n+2)}{n^2-1} \rightarrow \frac{n+2}{n \neq \pm 1} \Rightarrow g(n) \geq n+2 \\ \frac{an+r}{n+b} \quad n \leq \pm 1 \end{cases} \quad \text{سوال 3}$$

$$\begin{aligned} \xrightarrow{n=1} & \quad \frac{a+r}{1+b} = 2 \rightarrow a+r = 2+b \\ \xrightarrow{n=-1} & \quad \frac{-a+r}{-1+b} = 1 \rightarrow -a+r = -1+b \\ \Rightarrow & \quad c=2, b=\frac{1}{2} \rightarrow c+b = 2, d \end{aligned}$$

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$$g(n) = \frac{n^r - 1}{n^r + an + b} \quad f(n) = \frac{n+1}{n-c}$$

(سوال ٤)

$$\frac{(n+1)(n-1)}{(n-1)(n-c)} = \frac{n+1}{n-c}$$

$$a+b+c = -r+1+1=0$$

$$D_g = \mathbb{R} - \{b, c\} \quad D_f = \mathbb{R} - \{1\}$$

$$c=1 \Rightarrow n^r + an + b$$

(سوال ٥)

$$g(n) = f(n+1) + f(1-n) \quad f(n) = (n-c)^r (n-1)$$

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$$g(n) = (n-r)^r (n) + (-r-n)^r (-n) = (n^r - rn + r)n - (n^r + rn + r)n = -2rn$$

(سوال ٦)

$$f(-1) + f(1) = \begin{cases} \sqrt[n]{n+1} & n \leq 0 \\ \varepsilon \sqrt[n]{n} & n > 0 \end{cases}$$

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$$\varepsilon \sqrt[n]{1} + \sqrt[n]{-1} + 1 \leq \varepsilon - 1 + 1 \leq 2$$

(سوال ٧)

$$f(4) \quad f(n + \sqrt{n}) = n^{\varepsilon} + \sqrt[n]{n}$$

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$$n + \sqrt[n]{n} \leq 4 \rightarrow n + \sqrt{n} - 4 \leq 0$$

$$t^2 + t - 4 \leq 0 \rightarrow (t+3)(t-2) \leq 0 \rightarrow t = 2$$

$$\sqrt{n} \leq 2 \rightarrow n \leq 4 \Rightarrow f(4) = 4^{\varepsilon} + 1 \leq 241$$

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$$f(n-1) + f(1-n) \quad f(n) \leq n^3 + n$$

(سوال ۸)

$$(n-1)^3 + (n-1) + (1-n)^3 + (1-n) \leq 0$$

$$f(n) = \sqrt{\varepsilon n - \mu a} + k - 1 \rightarrow \varepsilon n - \mu a \geq 0$$

(سوال ۹)

$$g(n) = \sqrt{b - \varepsilon n} + \mu k$$

$$2f - g \leq \{ (1, k) \}$$

$$b - \varepsilon n \geq 0 \rightarrow n \leq \frac{b}{\varepsilon}$$

$$\frac{\mu a}{\varepsilon} \leq 1 \rightarrow a \leq \frac{\varepsilon}{\mu}$$

$$\frac{b}{\varepsilon} \leq 1 \rightarrow b \leq \varepsilon$$

$$2(\sqrt{\varepsilon - \varepsilon} + k - 1) - (\sqrt{\varepsilon - \varepsilon} + \mu k)$$

$$2k - 2 - \mu k \leq k \rightarrow k \leq -1$$

$$\mu \times \frac{\varepsilon}{\mu} - \frac{\varepsilon}{\mu} + 1 \leq \varepsilon - 2 + 1 \leq \mu$$

(سوال ۱۰)

$$f(n) = \sqrt{m - n} + n \quad g(n) = \sqrt{2n + 2}$$

$$m - n \geq 0 \rightarrow m \geq n$$

$$\hookrightarrow m \leq \sqrt{m}$$

$$2n + 2 \geq 0 \rightarrow n \geq -1$$

$$\sqrt{V - \mu} + n - 2\sqrt{\mu} = \mu + n - 2\sqrt{\mu} \leq 4\sqrt{\mu}$$

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$$\Rightarrow n \leq 4\sqrt{\mu} - \mu$$

$$\sqrt{V} + 4\sqrt{\mu} - \mu \leq \omega + 4\sqrt{\mu}$$