

پنجشنبه

22 August 2024

شهریور ۱۴۰۳

۱۴۴۶ صفر ۱۷

سوال ۱

$$\frac{1}{-4+4} \Rightarrow D = [0, 1]$$

$$f(n) = \left(\frac{1}{n}\right)^{n-1} - 1 = \left(\frac{1}{n}\right)^{n-1} - 1$$

$$y = \sqrt{n^3 f(n+1)} = \sqrt{n^3 \left(\left(\frac{1}{n+1}\right)^{n-1} - 1\right)} \rightarrow n^3 \times \left(\left(\frac{1}{n+1}\right)^{n-1} - 1\right) \geq 0$$

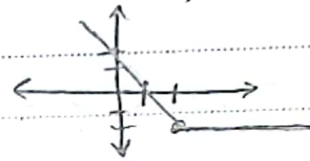
$$\left(\frac{1}{n+1}\right)^{n-1} \geq 1 \Rightarrow \left(\frac{1}{n+1}\right) \geq 1 \Rightarrow n \geq 1$$

$$f(n) = \sqrt{n+|n+2|} \rightarrow f(-n) = \sqrt{-n+|-n+2|} \rightarrow -n+|2-n| \geq 0$$

سوال ۲

$$D_f = (-\infty, 1]$$

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



$$y = \sqrt{\frac{n-1}{f(n)}} \Rightarrow \frac{n-1}{f(n)} \geq 0$$

سوال ۳

	-4	1	2	3
$n-1$	-	-0+	+	
$f(n)$	+	0-	-0+	0
p	-0+	0-	-0+	0

$$D_f = (-4, 1] \cup (2, 3)$$

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جمعه

روز بزرگداشت ابوعلی سینا و روز پزشک

23 August 2024

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سوال ۴

$$y = \frac{1}{9n^4 - 7n^2 - 4n - 3}$$

$$9n^4 - 7n^2 - 4n - 3 \neq 0 \Rightarrow 9n^4 - 7n^2 + 1 - n^2 - 4n - 3 \neq 0$$

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

$$3n^2 - n - 3 \neq 0 \rightarrow 3n^2 + an + b \neq 0 \Rightarrow a = -1 \quad b = -3$$

$$\sqrt{-(a+b)} \geq 2$$

01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

آغاز هفته دولت - شهادت سید علی اندرزگو (۱۹ رمضان - ۱۳۵۷ هـ ش)

سوال ۵

$$y \geq \sqrt{f(n) - f(\xi)} = \sqrt{n^3 + n - \frac{4\xi}{n^3} - \frac{\xi}{n}} \rightarrow n^3 + n - \frac{4\xi}{n^3} - \frac{\xi}{n} \geq 0$$

$$\frac{n^3 + n^2 - 4n^2 - 4\xi}{n^3} \geq 0 \quad n^3 + n^2 - 4n^2 - 4\xi \geq 0 \rightarrow t^3 + t^2 - 4t - 4\xi \geq 0$$

$$t^3 - 4\xi + t^2 - 4t = (t - \xi)(t^2 + t + 4)$$

$$(t - \xi)(t^2 + t + 4) \rightarrow t(t - \xi)$$

$$\Delta = 25 - 4\xi < 0 \quad t \geq n^2 \geq \xi$$

$$t \geq \xi = 0 \quad n \geq \pm 2$$

$$-\frac{2}{t} \leq \frac{0}{t} \leq \frac{2}{t}$$

$$Df \in [-2, 0) \cup [2, +\infty)$$

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$$f(n^3 + n) \geq 2n^2 - 1$$

سوال ۶

$$f(2) \rightarrow n^3 + n \geq 2 \Rightarrow n^3 + n - 2 \geq 0 \rightarrow \text{عبارت بر } n-1 \text{ جمع ضرایب منفرجه}$$

$$f(10) \rightarrow n^3 + n \geq 10 \Rightarrow n^3 + n - 10 \geq 0$$

$$n^3 - 1 + n - 2 = (n-1)(n^2 + 2n + 1) = (n-1)(n+1)^2$$

$$\Delta = 4 - 20 = -16 < 0$$

$$f(n^3 + n) \geq 2n^2 - 1$$

$$\frac{n^3 + n - 2}{-n^3 + n^2} \mid \frac{n-1}{n^2 + n + 2}$$

$$\Rightarrow n \geq 2 \rightarrow f(10) \geq 2 \times 10^2 - 1 = 199$$

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

$$\Rightarrow f(2) \geq 2 - 1 = 1$$

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$$f(n) \geq \sqrt{n-4} + 2 \geq \sqrt{n-4} - 2 + 4 \geq \sqrt{n-4} + 2$$

سوال ۸

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$$(\sqrt{n-4} + 2)^2 \geq \sqrt{n-4} + 2 = |2 + \sqrt{n-4}| \rightarrow \text{صورت}$$

$$g(n) \geq \sqrt{n-4} \sqrt{n-4-4+4} \geq \sqrt{n-4-4\sqrt{n-4}+4} \geq \sqrt{(\sqrt{n-4}-2)^2} \geq |\sqrt{n-4}-2|$$

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$$f(n) + g(n) \geq \sqrt{n-4} + 2 + |\sqrt{n-4}-2| \xrightarrow{u \geq 1} \sqrt{n-4} + 2 + \sqrt{n-4} - 2 \geq 2\sqrt{n-4}$$

$$\begin{cases} u \geq 1 & \sqrt{n-4} + 2 \\ a \geq 2 & b \geq 1 & c \geq 4 \\ \sqrt{n-4} + 2 & \sqrt{n-4} + 2 & \sqrt{n-4} + 2 \end{cases}$$

$$\frac{a+b}{c} \text{ تعیین کرد } c \in \mathbb{R} \quad a \in \mathbb{R} \quad b \in \mathbb{R}$$

$$f(n) = n^3 - 9n^2 + 12n^{-1+1}, \quad g(n) = n^3 + 9n^2 + 2vn + 2v - 2v$$

(V) Jow

$$\hookrightarrow (n-1)^3 + 1$$

$$\hookrightarrow (n+1)^3 - 2v$$

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$$\frac{g(\sqrt[3]{v} - 1)}{f(\sqrt[3]{v} + 1)} \Rightarrow \frac{(\sqrt[3]{v} - 1 + 1)^3 - 2v}{(\sqrt[3]{v} + 1 - 1)^3 + 1} = \frac{1 - 2v}{1} = 1 - 2v$$

$$f(n) = \frac{n+1}{n^2 - 6n + 1}$$

$$f(1) = \frac{1}{1 - 6 + 1} = -\frac{1}{4}$$

$$f(0) = \frac{1}{1}$$

$$g(n) = \left\{ (1, 1), (1, 0), (1, 0), (0, 0) \right\}$$

$$f(1) = \frac{1}{1 - 6 + 1} = -\frac{1}{4} \rightarrow -\frac{1}{4}$$

$$f(1) = \frac{1}{1 - 6 + 1} \rightarrow -\frac{1}{4}$$

$$\frac{g}{f} = \left\{ (1, \frac{1}{4}), (-1, 0) \right\}$$

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مسئله (۱)

$$15) f(x) = \left\{ \left(\frac{1}{x}, 2 \right), \left(\frac{x}{2}, -1 \right), (2, 2), \left(-\frac{1}{x}, 4 \right) \right\}$$

$$\rightarrow f(x^2) = \left\{ (\pm 1, 2), (\pm \sqrt{3}, -1), (\pm 2, 2) \right\}$$

$$16) 2g^2(x) + 1 = \left\{ (-2, 19), (1, 3), (3, 7), (-1, 1) \right\}$$

$$2) \frac{x}{g} = \left\{ (1, -4), (3, -1) \right\}$$

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