

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

سوال ۱) ۵

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

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

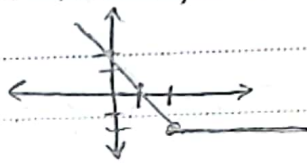
$$\left(\frac{1}{n+1}\right)^{n-1} \geq 1 \Rightarrow \left(\frac{1}{n+1}\right) \geq 1 \Rightarrow n \geq 1$$

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

سوال ۲) ۵

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

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



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

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

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

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جمعه

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سوال ۳) ۵

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

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

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

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

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

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

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

$$n^3 - 4n^2 + n^2 - 4\xi = (n - 4)(n^2 + n + 1)$$

$$(n - 4)(n^2 + n + 1) \rightarrow n(n - 4)$$

$$\Delta = 16 - 4 = 12 < 0 \quad n \geq 4$$

$$n \geq 4 \quad n \geq 4$$

$$-\frac{4}{n} + \frac{1}{n^2} - \frac{1}{n^3} + \frac{1}{n^4}$$

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

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

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

$$f(1) \rightarrow n^3 + n \geq 1 \Rightarrow n^3 + n - 1 \geq 0$$

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

$$\Delta = 4 - 4 = 0 \Rightarrow 1 \leq 2$$

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

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

$$\Rightarrow n \geq 2 \Rightarrow f(1, 0) \geq 2 \times \frac{1}{12} - 1 \geq -\frac{11}{12}$$

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

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

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

$$(1, 1.75) \quad \text{سوال ۱۸}$$

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

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

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

$$\frac{a+b}{c} = \frac{1}{r}$$

$$\begin{aligned} & \rightarrow n \geq 1 \sqrt{n-4} + 2 \quad a \geq 2 \quad b \geq 1 \quad c \geq 16 - 4 \\ & \rightarrow \sqrt{n-4} + 2 - \sqrt{n-4} + 2 \geq 4 \end{aligned}$$

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

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

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

5) (V) Don

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

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

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

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

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

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

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

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

9 سوال

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

مسئله (۱) ۵

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

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

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

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

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