

نام و نام خانوادگی: ^{۲۰} پارسه سریر علی لیلی / لک: ۱۰۱ - رشته: ریاضی - دبیرستان

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تابع است. $y_1 = y_2 \rightarrow y_1^3 = y_2^3 \rightarrow y_1^3 - y_2^3 = 0 \rightarrow (y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2) = 0$
 $y_1 = y_2 \rightarrow y_1^3 = y_2^3 \rightarrow y_1^3 - y_2^3 = 0 \rightarrow (y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2) = 0$
 $y_1 = y_2 \rightarrow y_1^3 = y_2^3 \rightarrow y_1^3 - y_2^3 = 0 \rightarrow (y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2) = 0$
 $y_1 = y_2 \rightarrow y_1^3 = y_2^3 \rightarrow y_1^3 - y_2^3 = 0 \rightarrow (y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2) = 0$

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الف تابع است: $y^3 - 2y = 0 \rightarrow y(y^2 - 2) = 0 \rightarrow y = 0 \text{ or } y = \pm\sqrt{2}$
 $y^3 - 2y = 0 \rightarrow y(y^2 - 2) = 0 \rightarrow y = 0 \text{ or } y = \pm\sqrt{2}$

ب) $x = 0 \rightarrow [y] = 1 \rightarrow y = [1, 2]$ ✓

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$f(x) = \begin{cases} x^2 - b; & x \geq 1 \\ a + kx; & x < 1 \end{cases} \rightarrow x = 1 \Rightarrow f(1) = a + k = 1 - b \Rightarrow a + k + b = 1$

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$a = x \rightarrow y = 0 \rightarrow a - b = 0 \rightarrow a = b$
 $b = x \rightarrow y = 0 \rightarrow a - b = 0 \rightarrow a = b$
 $a + b = 1 - 1 = 0$

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$a = 0 \rightarrow bx + c = 0 \rightarrow x = -\frac{c}{b}$
 $x = 2 \rightarrow y = 0 \rightarrow 2b + c = 0 \rightarrow c = -2b$

$$y = \sqrt{\frac{r^2x + r + ax + ab}{x+b}} \rightarrow \frac{(r+ax)x + r + ab}{x+b} \geq 0 \rightarrow x \neq b \rightarrow -b = r$$

$$\text{الف) } x^3 - x \geq 0 \rightarrow x(x^2 - 1) \geq 0 \Rightarrow x = 0, \pm 1 \quad \text{ب) } \frac{1}{x} + \frac{1}{x} - \frac{1}{x} \geq 0 \rightarrow D = [-1, 0] \cup [1, +\infty)$$

$$\text{ب) } |x| - 1 \geq 0 \rightarrow |x| \geq 1 \rightarrow x \geq 1 \text{ or } x \leq -1 \rightarrow D = (-\infty, -1] \cup [1, +\infty)$$

$$\text{الف) } |x| - [x] \neq 0 \rightarrow D = \mathbb{R} - \mathbb{Z} \cup \{0\} = \mathbb{R} - \mathbb{N}$$

$$\text{ب) } \sqrt{y} = -\sqrt{x+9} \rightarrow -\sqrt{x+9} \geq 0 \rightarrow \sqrt{x+9} \leq 0 \rightarrow x \leq -9 \rightarrow D = [-9, 0]$$

$$[x - \frac{1}{x}] + [x + \frac{1}{x}] \geq 0 \rightarrow [x - \frac{1}{x} - 1] + [x + \frac{1}{x} + 1] \geq 0$$

$$[x + \frac{1}{x}] \geq 0 \rightarrow [x + \frac{1}{x}] \geq 0 \rightarrow |x + \frac{1}{x}| \geq 0 \Rightarrow x \geq \frac{1}{x}$$

$$D = [\frac{1}{x}, +\infty)$$

$$\text{الف) } \sqrt{(x-a)} \geq 0 \rightarrow \sqrt{(x-a)} \geq 0 \rightarrow x \geq a$$

$$x - a \geq 0 \rightarrow x \geq a \Rightarrow \frac{a}{x} = b, \frac{10+a}{x} = c$$

$$c - b = \frac{10+a}{x} - \frac{a}{x} = \frac{10}{x} \Rightarrow x = 2$$