

پایه دهم

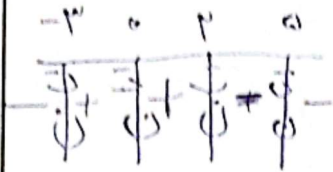
$$a(L(n)) \geq 0$$



$$D_L = [-5, 0] \cup [2, 5]$$

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$$L(n) \geq 0$$



$$D_L = (-3, 0) \cup (0, 2)$$

$$-3, -1, 1 \rightarrow \text{محل های صفر}$$

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$$L(n) - L(1) = n^2 - 1^2 = n^2 - 1$$

$$L(1) - L(1) = 1 - 1 = 0$$

$$L(1) = 1$$

$$L(1) = 1$$

$$L(-1) = ?$$

$$L(-1) - L(-1) = 1 - 1 = 0$$

$$L(-1) = 1$$

پ ✓

$$L(n) = \begin{cases} n^2 - \sqrt{n+2} & n > 2 \\ n^2 + 2 & n \leq 2 \end{cases}$$

$$L(L(0)) + L(L(1)) = ? \rightarrow 7 + 2 = 9$$

$$L(1) = 1^2 + 2 = 3 = L(0)$$

$$L(0) = 0 - \sqrt{0+2} = -\sqrt{2}$$

$$L(0) = 2$$

$$L(1) = 1^2 + 2 = 3$$

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$$L(n) = a n^2 - b n + 2$$

$$L(n-1) - L(n) = 2n + 2$$

$$n=1 \rightarrow L(1) - L(1) = 2 + 2 = 4$$

$$0 = 0 + 2 - (a - b + 2) = 4$$

$$-a + b = 4$$

$$b - a = 4 \rightarrow a - b = -4$$

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$$f(x) = x^2 - 2x + 9$$

$$f(2) = 4 - 4 + 9 = 9 \quad f(1) = 1 - 2 + 9 = 8$$

$$f(2) = 4 - 4 + 9 = 9$$

$$\frac{f(2) - f(1)}{2 - 1} = \frac{9 - 8}{1} = 1$$

$$\frac{2 + 9}{(-1)^2} = \frac{11}{1} = 11$$

✓

$$f(x) = \begin{cases} x^2 + 1 & x \geq 2 \\ x^2 & x < 2 \end{cases}$$

$$f(2) = 2^2 + 1 = 5$$

$$f(1) = 1^2 = 1$$

$$f(2) = 4 + 1 = 5$$

$$\frac{f(2) - f(1)}{2 - 1} = \frac{5 - 1}{1} = 4$$

✓

$$f = \{(2, 4), (3, 9), (1, 1), (4, 16)\} \quad f(2) = 4 \quad f(3) = 9$$

$$f(1) = 1 \quad f(4) = 16$$

$$\frac{f(2) - f(1)}{2 - 1} = \frac{4 - 1}{2 - 1} = 3$$

✓

$$f(x) = \frac{x^2 - 2x + 9}{x^2 + 2x + 1}$$

$$f(\sqrt{2} - 1) = ?$$

$$f(1) = \frac{1 - 2 + 9}{1 + 2 + 1} = \frac{8}{4} = 2$$

$$f(\sqrt{2} - 1) = \frac{(\sqrt{2} - 1)^2 - 2(\sqrt{2} - 1) + 9}{(\sqrt{2} - 1)^2 + 2(\sqrt{2} - 1) + 1} = \frac{2 - 2\sqrt{2} + 1 - 2\sqrt{2} + 2 + 9}{2 - 2\sqrt{2} + 1 + 2\sqrt{2} - 2 + 1} = \frac{10 - 2\sqrt{2}}{2} = 5 - \sqrt{2}$$

✓

$$f(x) = x^2 + \frac{1}{x^2}$$

$$(f(\sqrt{x}))^2 - f(x) = (\sqrt{x})^2 + \frac{1}{(\sqrt{x})^2} - x^2 - \frac{1}{x^2} = x + \frac{1}{x} - x^2 - \frac{1}{x^2}$$

✓

$$f(\sqrt{x}) = x + \frac{1}{x} \rightarrow (x + \frac{1}{x})^2 = x^2 + 2 + \frac{1}{x^2}$$