

۱۹، ۲۵ آذرین

سوال

۱ در صفحه آخر

$$D_f = R - \{1, 3\} \rightsquigarrow f(x) = \frac{x}{x-1} = -x$$

(۲)

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

$$\frac{g}{f} = \left\{ -\frac{1}{x}, 6 \right\} \rightsquigarrow \left\{ (0, 6), (1, -\frac{1}{x}) \right\}$$

$$\{1, 3\}$$

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

(۳)

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

$$xg'(x) + 1 = \left\{ (-2, 19), (1, 3), (3, 9), (-1, 1) \right\}$$

(۴)

$$\frac{xg}{g} = \left\{ (1, -4), (3, -1), (-1, 0) \right\} \Rightarrow \left\{ (1, -4), (3, -1) \right\}$$

$$xg + g = \left\{ (2, 5), (3, 5), (-2, 4) \right\}$$

(۵)

$$D_f = \{0, 1, 3\}$$

(۶)

$$\sqrt{1+x} - x$$

$$x-1$$

$$\frac{[x] + [-x] + 1}{1}$$

$$\sqrt{1+x} - x$$

$$\frac{(x-1)([x] + [-x] + 1)}{1}$$

$$x \geq 0 \rightarrow [x] \geq 0$$

$$x < 0 \rightarrow [x] \leq -1$$

$$\sqrt{1+x} - x \geq 0 \rightarrow \sqrt{1+x} \geq x \rightarrow x^2 \geq 1+x \rightarrow x^2 - x - 1 \geq 0$$

$$Df = -x^2 + 5x - 4 \geq 0 \leadsto x^2 - 5x + 4 \leq 0 \leadsto (x-1)(x-4) \leq 0 \quad (6)$$

$$\frac{-1}{+4-4+} \quad [1, 4] \quad f(1) = -1 + 5 - 4 = 0$$

$$f(4) = -4 + 20 - 4 = 12$$

$$f(4) = -16 + 20 - 4 = 0$$

$$\frac{f(x)}{g(x)} = \left\{ (1, 0), \left(\frac{2\sqrt{3}}{3}, 0 \right), (4, 0) \right\} \quad (7)$$

$$(x-1)^2 + 1 \quad (1, 25) \quad (7)$$

بزرگترین درجه x و قدر است $R_f = R$
باید برد را به روش اعلیٰ بیت آوری! پر R

$$(b) \quad yx^2 - 2yx - 1 = 0 \rightarrow x = \frac{2y \pm \sqrt{4y^2 + 4y}}{2y} \rightarrow \Delta \geq 0$$

$$4y^2 + 4y \geq 0 \rightarrow 4y(y+1) \geq 0 \quad \frac{-1}{+4-4+} \quad (-\infty, -1] \cup (0, +\infty) = R_f$$

$$(الف) \quad -\frac{b}{2a} = \frac{+4}{2} = 2 \leadsto 4 - 1 + 1 = 4 \quad R_f = [4, +\infty) \quad (1)$$

$$(ب) \quad \frac{-4}{-2} = 2 \leadsto -9 + 11 + 3 = 12 \quad R_f = (-\infty, 12] \quad (2)$$

$$(ج) \quad \frac{-b}{2a} = \frac{+4}{2} = 2 \leadsto 4 - 1 - 3 = -4 \leadsto R_f = [0, +\infty) \quad (3)$$

$$(د) \quad \frac{-b}{2a} = \frac{-4}{-2} = 2 \leadsto 11 - 9 = 2 \leadsto R_f = [0, 2] \quad (4)$$

$$(الف) \quad R_f = R \quad (ب) \quad R_f = R \quad (ج) \quad R_f = [0, +\infty) \quad (4)$$

$$(د) \quad R_f = [0, +\infty)$$

$$(الف) \quad R_f = R - \{3\} \quad (ب) \quad R_f = R - \{12\} \quad (10)$$

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

$$= \sqrt{x-r} + r$$

$$g(x) = \sqrt{(\sqrt{x+r})^2 + r + r\sqrt{x+r}} = \sqrt{(\sqrt{x+r} + r)^2} =$$

$$\sqrt{x+r} - r$$

$$f(x) + g(x) = \sqrt{x-r} + r + \sqrt{x+r} - r = \sqrt{x-r} + \sqrt{x+r} = a + b\sqrt{x+c}$$

$$a=0, b=r, c=-r$$

$$\frac{a+b}{c} = \frac{0+r}{-r} = \left(\frac{-1}{r} \right)$$

Arman

$$\text{الف) } y = n^3 - 3n^2 + 2n - 1 + 1 = y = (n-1)^3 + 1 \quad (v)$$

$$y-1 = (n-1)^3 \rightarrow \sqrt[3]{y-1} = n-1 \rightarrow n = \sqrt[3]{y-1} + 1$$

$$R_f = \mathbb{R}$$

$$\text{ب) } y = \frac{1}{n^2 - 2n} \rightarrow n^2 y - 2ny = 1 \rightarrow n^2 y - 2ny - 1 = 0$$

$$y \neq 0 \rightarrow n = \frac{2y \pm \sqrt{4y^2 + 4y}}{2y} \rightarrow 4y(y+1) \geq 0 \rightarrow \frac{-1}{+} \frac{0}{-} \frac{+}{+}$$

$$y = 0 \rightarrow 0 = 1 \times \text{صفتی وجود ندارد!} \rightarrow R_f = (-\infty, -1] \cup (0, +\infty)$$