

۱۹، ۵ آذین

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

$$t^2 = x + \sqrt{x-t} + x - t\sqrt{x-t} + 2\sqrt{x^2 - tx + t^2}$$

$$t^2 = 2x + tx - 19$$

$$t = \sqrt{tx-19} \Rightarrow 2\sqrt{x-9}$$

$$\begin{aligned} a &= 0 \\ c &= -9 \\ b &= 2 \end{aligned}$$

$$\left(-\frac{1}{2} \right)$$

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$$f(x) = \frac{x+2}{x^2-4x+9}$$

$$f(2) = -4$$

$$f(1) = 0$$

$$f(2) = 0$$

$$f(0) = \frac{2}{9}$$

$$\Rightarrow \frac{9}{f} = (2, -\frac{1}{2}) \text{ و } (1, 0) \text{ و } (2, 0) \text{ و } (4, 0)$$

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$$الف) f(2x) = (\frac{1}{2}, 2) \text{ و } (-1, \frac{1}{2}) \text{ و } (2, 2) \text{ و } (-\frac{1}{2}, 2)$$

$$ب) f(x^2) = (\pm 1, -1) \text{ و } (\pm \sqrt{2}, 2)$$

$$ج) 2 \text{ و } f(x) + 1 = (-2, \frac{1}{9}) \text{ و } (1, \frac{1}{2}) \text{ و } (2, \frac{1}{2}) \text{ و } (-1, \frac{1}{2})$$

$$د) (3, -1) \text{ و } (1, -4) \text{ و } (-1, 0)$$

$$h = 2f + 9$$

$$(2, 0) \text{ و } (-2, 0) \text{ و } (2, 0)$$

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$$Df = \left\{ \begin{array}{l} \sqrt{cx} - x \geq 0 \Rightarrow x^2 - cx \leq 0 \\ Df = \mathbb{R} - \{2, 4\} \end{array} \right\}$$

$$\frac{0}{+} \frac{c}{+} \frac{0}{+} \frac{c}{+} \frac{0}{+}$$

$$D \left(\frac{f}{g+1} \right) x \Rightarrow Df = [0, c] = \{2\}$$

$$\Rightarrow x = \{0, 1, 2\}$$

$$g = [x] + [-x] \Rightarrow g \neq -1 \Rightarrow x \in \mathbb{Z}$$

$$f(1) = 0$$

$$f(2) = 2$$

$$f(4) = 0$$

$$f(5) = 0$$

$$\Rightarrow h(x) = \frac{f(x)}{g(x)} = (1, 0), (2, 1), (4, 0), (5, 0)$$

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

$$الف) y = (x-1)^2 + 1 \Rightarrow \sqrt[3]{y-1} - 1 = x \Rightarrow R_f = \mathbb{R}$$

بافرض. $y \neq$ عبارت را درجه 2 منقض کردیم!

$$ب) y = \frac{1}{x^2 - 2x} \Rightarrow yx^2 - 2yx - 1 = 0 \Rightarrow \Delta \geq 0 \Rightarrow 4y^2 + 4y \geq 0$$

$$\begin{array}{c} -1 \quad 0 \\ + \quad - \quad + \\ 2 \quad 2 \quad 2 \end{array}$$

$$الف) y = x^2 - 4x + 10 \Rightarrow R_f = [9, +\infty)$$

$$x_5 = 2 \quad y_5 = 9$$

$$ب) y = -x^2 + 6x + 3 \Rightarrow R_f = (-\infty, 12]$$

$$x_5 = 3 \quad y_5 = 12$$

$$ج) y = \sqrt{x^2 - 2x - 2} \Rightarrow R_f = [-1, +\infty)$$

$$د) y = \sqrt{5x - x^2} \Rightarrow [0, 5]$$

$$الف) \mathbb{R}$$

$$ب) \mathbb{R}$$

$$ج) [0, +\infty)$$

$$د) [0, 5]$$

$$\mathbb{R} - \left\{ \frac{5}{2} \right\}$$

$$الف) \mathbb{R} - \{3\}$$

$$ب) \mathbb{R} - \{2\}$$

$$Df \rightarrow \Delta n - n^2 - 2 \geq 0 \rightarrow n^2 - \Delta n + 2 \leq 0 \rightarrow 1 \leq n \leq 2$$

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$$Df \cap Dg = \{1, 2, 3\}$$

$$\frac{f}{g} = h = \left\{ (1, 0), (2, \sqrt{\frac{2}{3}}), (3, 0) \right\}$$

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

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

$$R_f = \mathbb{R}$$

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

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

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