

یلتا اسری - یار هم A

$$f(x) = \sqrt{x + f\sqrt{x - f}} \xrightarrow{\text{تقسیم مثلثی}} t = \sqrt{x - f} \Rightarrow x = t^2 + f$$

$$g(x) = \sqrt{x - f\sqrt{x - f}}$$

$$f(t) = \sqrt{t^2 + ft + f} \Rightarrow \sqrt{(t + r)^2} = |t + r|$$

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

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

$$f(x) + g(x) = 2t = 2\sqrt{x - f} = a + b\sqrt{x + c} \begin{cases} a = 0 \\ b = 2 \\ c = -f \end{cases}$$

$$\frac{a+b}{c} = \frac{2}{-f}$$

$$D_f = \mathbb{R} - \{1, 3\}$$

$$D_g = \{2, 1, 3, 0\}$$

$$\Rightarrow D_g \cap D_f = \{2, 0\} \Rightarrow \frac{g}{f} = \left\{ (0, 4), (2, \frac{1}{2}) \right\}$$

$$(x-1)(x-3)$$

$$\frac{f}{g} = \frac{1}{4}$$

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

$$f(x) = \{(1, 2), (\sqrt{3}, -1), (-\sqrt{3}, -1), (2, 2), (-2, 2)\}$$

$$g(x) = \{(-2, 4), (1, 3), (2, 4), (-1, 1)\}$$

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

$$h = f + g$$

$$L \rightarrow h = \{(1, 5), (3, 5), (-1, 4)\}$$

$$f(x) = \frac{\sqrt{3x - x}}{x - 2}$$

$$\begin{aligned} \text{I) } 3x - x > 0 &\Rightarrow x > 0 \\ \text{II) } 3x - x > 0 &\Rightarrow \sqrt{3x} > x \Rightarrow 3x > x^2 \Rightarrow x^2 - 3x < 0 \Rightarrow x(x - 3) < 0 \Rightarrow D_f = [0, 3] \end{aligned}$$

$$g(n) = [n] + [-n]$$

$$\begin{cases} x \in \mathbb{Z} & D_x = 0 \rightarrow g(n) + 1 = 1 \checkmark \Rightarrow D_g = \mathbb{Z} \\ x \notin \mathbb{Z} & D_x = -1 \rightarrow g(n) + 1 = 0 \rightarrow \text{غير قابل قبول} \end{cases}$$

$$\left(\frac{f}{g} \right)(n)$$

$$\Rightarrow D_f \cap D_{(g)_n} = \{0, 1, 3\}$$

$$f(x) = \sqrt{3x - x} \Rightarrow \sqrt{2x - x} \Rightarrow \sqrt{x} \Rightarrow D_f = [0, \infty)$$

• $f(x) = \sqrt{\omega x - x^2 - 4} \rightarrow \sqrt{-(x-4)(x+1)} \rightarrow \frac{-1}{-4+4} \rightarrow D_f = [1, 4]$

• $g(x) = \{(1,1)(2,1)(3,1)(\omega,1)\} \rightarrow D_g = \{1, 2, 3, \omega\} \Rightarrow D_f \cap D_g = \{1, 2, 3\}$

• $h(x) = \frac{f(x)}{g(x)} \Rightarrow \{(1,0)(2,\frac{\sqrt{3}}{2})(3,0)\}$

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

• ب) $y = \frac{1}{x^2 - 2x} \rightarrow yx^2 - 2xy - 1 = 0 \rightarrow x = \frac{2 \pm \sqrt{4y^2 + 4y}}{2y} \rightarrow I) y \neq 0 \Rightarrow R_f = (-\infty, -1] \cup (0, +\infty)$
 $\hookrightarrow II) 4y(y+1) \geq 0 \Rightarrow \frac{-1}{+1} \leq \frac{0}{-1} \Rightarrow y \leq -1$

• الف) $y = x^2 - 4x + 10 \rightarrow \left| \begin{array}{l} \frac{-b}{2a} = \frac{4}{2} = 2 \\ F - 4 + 10 = 6 \end{array} \right. \rightarrow R_f = [6, +\infty)$

• ب) $y = -x^2 + 4x + 3 \rightarrow \left| \begin{array}{l} \frac{-b}{2a} = 2 \\ -9 + 16 + 3 = 10 \end{array} \right. \rightarrow R_f = (-\infty, 10]$

• ج) $y = \sqrt{x^2 - 4x - 3} \rightarrow \left| \begin{array}{l} \frac{-b}{2a} = \frac{4}{2} = 2 \\ F - 4 - 3 = -7 \end{array} \right. \rightarrow R_f = [0, +\infty)$

• د) $y = \sqrt{4x - x^2} \rightarrow \left| \begin{array}{l} \frac{-b}{2a} = \frac{-4}{-2} = 2 \\ 16 - 4 = 12 \end{array} \right. \rightarrow R_f = [0, 2]$

• الف) $\mathbb{R} \rightarrow$ ب) $R_f = \mathbb{R} \rightarrow$ ج) $R_f \rightarrow [0, +\infty) \rightarrow$ د) $R_f = [0, +\infty)$

• الف) $y = \frac{3x+1}{x-2} \rightarrow R_f = \mathbb{R} - \{2\}$

• $R_f = \mathbb{R} - \{\frac{a}{c}\}$

• ب) $y = \frac{2x+1}{x+1} \rightarrow R_f = \mathbb{R} - \{1\}$