

$$f(x) = \sqrt{x+4} \sqrt{x-4}$$

$$g(x) = \sqrt{x-4} \sqrt{x-4}$$

$$\begin{aligned} a &= 4 \\ b &= 2 \\ c &= -4 \end{aligned}$$

$$\frac{a+b}{c} = \frac{4}{-4} = -1$$

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$$f(x) + g(x) = A$$

$$A^2 = f^2(x) + g^2(x) + 2fg(x) = x+4 + x-4 + 2\sqrt{x^2-16}(x-4) = 2x + 2(x-4) = 4x-8$$

$$A = \sqrt{4x-8} = 2\sqrt{x-2} = a+b\sqrt{x+c}$$

$$x^2 - 16x + 64 = (x-4)^2$$

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$$f(x) = \frac{x+2}{x^2-x+3} = \frac{x+2}{(x-1)(x-2)}$$

$$g(x) = \{(2, 1)(1, 0)(3, 0)(0, 4)\}$$

$$f(2) = -4$$

$$f(1) = 0$$

$$f(3) = 0$$

$$f(0) = \frac{2}{3}$$

$$\frac{g}{f} = \{(2, -\frac{1}{4})(1, 0)\}$$

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

$$g(x) = \{(-2, 3)(1, -1)(3, 2)(-1, 0)\}$$

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

$$b) f(x^2) = \{(1, 2)(-1, 2)(5, -1)(-5, -1)(2, 2)(-2, 2)\}$$

$$c) 2g^2(x) + 1 = \{(-2, 19)(1, 3)(3, 9)(-1, 1)\}$$

$$d) \frac{f}{g} = \{(1, -4)(3, -1)\}$$

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$$f(x) = \{(2, 1)(3, 1)(4, 9)(-2, 0)\}$$

$$g(x) = \{(0, 1)(2, 3)(-2, 6)(-1, 2)(3, 3)\}$$

$$h = 2f + g = \{(2, 0)(3, 0)(-2, 6)\}$$

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

$$g(x) = [x] + [-x] \begin{cases} x \in \mathbb{Z} & 0 \\ x \notin \mathbb{Z} & -1 \end{cases} \text{ * خروج 0 - 1}$$

$$\left(\frac{f}{g+1}\right)(x) = f(x)$$

$$D_f = \{0, 1, 2\}$$

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$$x \geq 0 \quad \sqrt{3x-x} \geq 0 \Rightarrow \sqrt{3x} \geq x$$

$$x \neq 2 \quad 3x \geq x^2 \Rightarrow x^2 - 3x \leq 0 \quad \frac{0}{+1} - \frac{3}{0} +$$

$$f(x) = \int \omega x - x^5 - 4 \quad g(x) = \{(1, 2)(2, 1)(4, 6)(6, 1)\}$$

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

$$-(x^2 - \omega x + 4) = -(x-1)(x-4) \geq 0$$

$$\frac{1}{-1} + \frac{4}{1} =$$

$$\text{ا) } y = x^3 - 3x^2 + 3x \rightarrow y-1 = (x-1)^3$$

$$\Rightarrow \sqrt[3]{y-1} = x-1 \Rightarrow \sqrt[3]{y-1} + 1 = x$$

$$R_f = \mathbb{R}$$

$$\text{ب) } y = \frac{1}{x^2 + x} \quad yx^2 - yx = 1$$

باشروا . لا عبارت ۱ درجه ۲ منظمه !

$$yx^2 - yx - 1 = 0$$

$$y = 0 \rightarrow 0 - 1 = 0 \times$$

$$\Delta 40 \Rightarrow 4y^2 + 4y < 0$$

$$\frac{1}{+1} - \frac{0}{-1} = R_f = \mathbb{R} - \{-1\}$$

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$$\text{ا) } y = x^2 - 5x + 1$$

$$-\frac{14-5}{4} = 9 \rightarrow R_f = [9, +\infty)$$

$$\text{ب) } -x^2 + 4x + 3 = y$$

$$-\frac{36+12}{-4} = 12 \quad R_f = (-\infty, 12]$$

$$\text{ج) } \sqrt{x^2 - 5x - 3} = y$$

$$-\frac{14-5}{4} = -9 \rightarrow R_f = [0, +\infty)$$

$$\text{د) } y = \sqrt{9x - x^2}$$

$$-\frac{81}{-4} = 9 \quad R_f = [0, 3]$$

$$\text{ا) } y = x^3 - \omega x^2 + 2x + 1$$

$$R_f \neq \mathbb{R}$$

$$\text{ب) } y = x^3 - 9x^2 + 40x + 1$$

$$R_f = \mathbb{R}$$

$$\text{ج) } y = \sqrt{x^3 - 9x^2 + 40x + 1}$$

$$R_f = [0, +\infty)$$

$$\text{د) } (x^3 - 9x^2 + 40x + 1)^2 = y$$

$$R_f = [0, +\infty)$$

$$\text{ا) } y = \frac{2x+1}{x-2}$$

$$R_f = \mathbb{R} - \{2\}$$

$$\text{ب) } y = \frac{2x+1}{x+1}$$

$$R_f = \mathbb{R} - \{1\}$$

(الف) $y = n^3 - 2n^2 + 2n - 1 + 1 = y = (n-1)^3 + 1$ (۷)

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

$R_f = \mathbb{R}$

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

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

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