

نام و نام خانوادگی: محمد سید شریانی یا سیستم تشریحی: کتب شماره ۷ کلاس: الیاس A

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

$$g(x) = \sqrt{x-4}\sqrt{x-4} = \sqrt{x-4+4-4\sqrt{x-4}} = \sqrt{(\sqrt{x-4}-2)^2} = \sqrt{x-4}-2$$

$$f(x) + g(x) = \sqrt{x-4} + 2 + \sqrt{x-4} - 2 = 2\sqrt{x-4} = a + b\sqrt{x} + c$$

$$a=0, b=2, c=-4 \Rightarrow \frac{a+b}{c} = \frac{0+2}{-4} = -\frac{1}{2} = \boxed{-\frac{1}{2}}$$

$$g(x) = \{(2, 1), (0, 0), (2, 5), (0, 4)\}$$

$$f(x) = \frac{x+5}{x^2-4x+5} \rightarrow x^2-4x+5 = (x-1)(x-5) = 0 \rightarrow x=1, 5$$

در تابع $f(x)$ در ازای
 $x=1$ و $x=5$ تعریف
نشده است

$$x=5 \rightarrow \frac{5+5}{5-20+5} = \frac{10}{-10} = -1, g(5) = 1$$

$$x=0 \rightarrow \frac{0+5}{0-0+5} = \frac{5}{5} = 1, g(0) = 4 \rightarrow \frac{g}{f} = \{(2, -\frac{1}{2}), (0, 4)\}$$

$$الف) f(5x) = \{(\frac{1}{5}, 2), (\frac{5}{5}, -1), (2, 5), (-\frac{1}{5}, 6)\}$$

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

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

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

$$تابع f و g دارای n همان مشترک 2, -2, 3$$

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

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

$$h = 2f + g = \{(-2, 4), (2, 4), (3, 4)\}$$

$$f(x) = \frac{\sqrt{3x-x}}{x-2} \Rightarrow x \geq 0, x \neq 2, \sqrt{3x-x} \geq 0 \Rightarrow \sqrt{2x} \geq 0 \Rightarrow 2x \geq 0 \Rightarrow x \geq 0$$

$$\Rightarrow x \geq 0 \Rightarrow D_f = [0, 2] - \{2\} \quad g(x) \xrightarrow{2 \in \mathbb{Z}} [1] + [-1] = 0 \quad \checkmark$$

$$3 \notin \mathbb{Z} \rightarrow [1, 0] + [-1, 0] = -1 \quad \times$$

$$D_f = \{x | x \in \mathbb{Z}, 0 \leq x \leq 2, x \neq 2\}$$

$$f(x) = \sqrt{5x - x^2} - 4$$

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

$$f(1) = \sqrt{5 - 1} - 4 = 0$$

$$f(2) = \sqrt{10 - 4} - 4 = \sqrt{6}$$

$$f(4) = \sqrt{20 - 16} - 4 = 0$$

$$f(5) = \sqrt{25 - 25} - 4 = -4$$

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

$$\downarrow$$

$$\downarrow$$

$$\downarrow$$

$$y = x^2 - 3x^2 + 4x$$

$$(x-1)^2 = x^2 - 2x + 1 \Rightarrow y = (x-1)^2 + 1$$

$$\Rightarrow R_f = R$$

$$y = \frac{1}{x^2 - 2x} \Rightarrow yx^2 - 2xy = 1 \Rightarrow yx^2 - 2xy - 1 = 0$$

$$\Delta = b^2 - 4ac \Rightarrow (-2y)^2 - 4(-1)y = 4y^2 + 4y \Rightarrow \frac{-b \pm \sqrt{\Delta}}{2a}$$

$$\Rightarrow 4y^2 + 4y \geq 0 \Rightarrow y^2 + y \geq 0 \Rightarrow y(y+1) \geq 0 \Rightarrow y \in (-\infty, -1] \cup [0, +\infty)$$

$$y = -x^2 + 6x + 5 \Rightarrow y_5 = -\frac{\Delta}{4a}$$

$$36 - 4(-5) = 56 = \Delta \Rightarrow \frac{-6 \pm \sqrt{56}}{-2} = 15$$

$$R_f = (-\infty, 15]$$

$$y = x^2 - 4x + 1 \Rightarrow y_5 = -\frac{\Delta}{4a}$$

$$\Delta = b^2 - 4ac \Rightarrow 16 - 4 = 12 \Rightarrow y_5 = -\frac{12}{4} = -3$$

$$R_f = [6, +\infty)$$

$$y = \sqrt{4x - x^2} \quad \Delta = 16 - 0 = 16 \Rightarrow y_5 = 4$$

$$R_f = [0, 4]$$

$$y = \sqrt{x^2 - 4x - 4} \quad \Delta = 16 - 4(-4) = 32$$

$$\frac{-2 \pm \sqrt{32}}{2} = -2 \Rightarrow y_5 = -2$$

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

$$y = x^2 - 4x^2 + 3x + 2$$

برای آنکه بتوان آن فرد کرد $R = R$

$$R_f = R$$

$$y = x^2 - 5x^2 + 2x + 1$$

برای آنکه بتوان آن فرد کرد $R = R$

$$R_f = R$$

$$y = (x^2 - 4x^2 + 3x + 1)^2$$

برای آنکه بتوان آن فرد کرد $R = R$

$$(R)^2 = [0, +\infty) \Rightarrow R_f = [0, +\infty)$$

$$y = \sqrt{x^2 - 4x^2 + 5x + 1}$$

برای آنکه بتوان آن فرد کرد $R = R$

$$\sqrt{R} = [0, +\infty) \Rightarrow R_f = [0, +\infty)$$

$$y = \frac{2x+1}{x-2} \Rightarrow xy - 2y = 2x+1 \Rightarrow 2x+1 - xy + 2y = 0$$

(الف)

$$\Rightarrow x(2-y) + 1 + 2y \Rightarrow x(2-y) = -2y-1 \Rightarrow x = \frac{-2y-1}{2-y} \Rightarrow 2-y \neq 0$$

$$\Rightarrow y \neq 2 \Rightarrow R_f = R - \{2\}$$

$$y = \frac{2x+1}{x+1} \Rightarrow xy + y = 2x+1 \Rightarrow 2x+1 - xy + y = 0$$

$$\Rightarrow x(2-y) + 1 + y \Rightarrow x(2-y) = -y-1 \Rightarrow x = \frac{-y-1}{2-y} \Rightarrow 2-y \neq 0$$

$$\Rightarrow y \neq 2 \Rightarrow R_f = R - \{2\}$$