

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

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

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

$$g(x) = |\sqrt{x-2}-2| \quad x \geq 4 \quad \sqrt{x-2}-2 \geq 0 \quad |\sqrt{x-2}-2| = \sqrt{x-2}-2$$

$$\sqrt{x-2}+2 + \sqrt{x-2}-2 = 2\sqrt{x-2} \quad \frac{a+b}{c} = \frac{a}{c} + \frac{b}{c} \quad \frac{2}{-2} = -1$$

$$f(x) = \frac{x+2}{x^2-2x+4} \quad g(x) = \left(2, \frac{1}{-2}\right), (0, 2)$$

$$x=2 \rightarrow \frac{2^2}{2^2-2 \cdot 2+4} = \frac{4}{4-4+4} = \frac{4}{4} = 1$$

$$x=1 \rightarrow \frac{1^2}{1^2-2 \cdot 1+4} = \frac{1}{1-2+4} = \frac{1}{3}$$

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

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

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

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

$$3) \quad \frac{xf}{g} = \{(1, -4), (3, -1)\}$$

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

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

$$f(x) = \frac{\sqrt{3x-x}}{x-2} \quad g(x) = [x] + [-x] \quad \begin{cases} 3x \geq 0 & x \geq 0 \\ 3x \geq x^2 & x \geq x \end{cases} \Rightarrow \begin{cases} 3 \geq x \geq 0 \\ 3 \geq x \geq 0 \end{cases}$$

$$g(x) + 1 = \frac{1}{x-2} \quad \left(\frac{f}{g+1}\right)(x) \Rightarrow \text{دسته برابر است}$$

Arman

$$h(x) = \frac{f(x)}{g(x)}$$

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

$$(x-1)(4-x) \geq 0$$

$$D_f = [1, 4]$$

در این دامنه قرار دارد

$$h(1) = \frac{0}{0} = 0$$

$$h(4) = \frac{\frac{16}{\sqrt{4}}}{4} = \frac{\sqrt{4}}{4}$$

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

$$h(4) = \frac{0}{4} = 0$$

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

$$(x-1)^4 = y-1 \quad x-1 = \sqrt[4]{y-1}$$

$$x = \sqrt[4]{y-1} + 1 \rightarrow R_f = \mathbb{R}$$

$$\Rightarrow y = \frac{1}{x^4 - 4x^2}$$

$$yx^4 - 4yx^2 - 1 = 0$$

$$x = \pm \sqrt[4]{y} \pm \sqrt[4]{4y^2 - 4y(-1)}$$

$$4y^2 + 4y \geq 0 \quad y \rightarrow y+1$$

$$4y(y+1) \geq 0$$

$$R_f = (-\infty, -1] \cup (0, +\infty)$$

$$y = x^2 - 4x + 10 \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{4 \pm \sqrt{16 - 4(1-10)}}{2} = \frac{4 \pm \sqrt{40}}{2}$$

$$x = \frac{4 \pm \sqrt{40}}{2}$$

$$y = -x^2 + 4x + 9 = \frac{4}{-1} = -4 \quad R_f = (-\infty, 14]$$

$$y = \sqrt{x^2 - 4x - 10} \quad \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{4 \pm \sqrt{16 - 4(-10)}}{2} = \frac{4 \pm \sqrt{56}}{2}$$

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

$$y = \sqrt{4x - x^2} \quad \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{2 \pm \sqrt{4 - 4(-1)}}{2} = \frac{2 \pm \sqrt{5}}{2}$$

$$R_f = [0, 4]$$

Arman

Subject:

Year:

Month:

Day:

1) $y = x^w \omega x^r + r x + 1$ $R_f = \mathbb{R}$

2) $y = x^w - r x^r + w x + r$ $R_f = \mathbb{R}$

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3) $y = [x^w - r x^r + w x + 1]^r$ $R_f = [0, +\infty)$

4) $y = (x^w - r x^r + w x + 1)^r$ $R_f = [0, +\infty)$

5) $y = \frac{w x + 1}{x - r}$ $R_f = \mathbb{R} \setminus \{w\}$

6) $y = \frac{r x + 1}{x + 1}$ $R_f = \mathbb{R} \setminus \{r\}$

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