

$$y = \sqrt{x f(x)}$$

$$\begin{array}{cccc} -5 & 0 & 2 & 5 \\ -\phi & +\phi & -\phi & +\phi \end{array}$$

$$x f(x) \geq 0 \quad D = [-5, 0] \cup [2, 5]$$

$$y = \frac{-x}{f(x)}$$

$$\begin{array}{cccc} -3 & 0 & 2 & 5 \\ -\phi & +\phi & +\phi & -\phi \end{array}$$

$$D = (-3, 0) \cup (0, 2) \Rightarrow \text{در صفر تعریف نمی شود}$$

$$\begin{aligned} f(2) - 2f(2) &= 2 - 4 + 2 \\ -f(2) &= +2 \quad f(2) = -2 \\ f(-2) - 2(-2) &= 2 + 4 + 2 \\ f(-2) &= 10 \end{aligned}$$

$$\begin{aligned} f(5) &= 5 - \sqrt{5+4} = 2 \\ f(2) &= 2+2=4 \\ f(1) &= 1+2=3 \\ f(5) &= 2 \end{aligned}$$

$$f(2) + f(5) = 4 + 2 = 6$$

$$\begin{aligned} f(x-1) - f(x) &= a(x-1)^2 + b(x-1) - ax^2 + bx - x = \\ a(x^2 - 2x + 1) - bx + b - ax^2 + bx - x &= -2ax + a + b = 4x + 2 \\ -2a &= 4 \quad a = -2 \\ a + b &= 1 \quad -2 + b = 1 \quad b = 3 \\ a - b &= -2 - 3 = -5 \end{aligned}$$

$$\frac{(\sqrt{x}-1)^2 + 4(\sqrt{x}-1) + 5}{(\sqrt{x}-1)^2 + 4(\sqrt{x}-1) + 5} = \frac{3+4-4\sqrt{x}+4\sqrt{x}-1+5}{3+4-4\sqrt{x}+4\sqrt{x}-1+5} = \frac{4}{4} = 1$$

$$f(\sqrt{x}-1) = \frac{4}{4}$$

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

$$x - \frac{1}{x} = -3$$

$$\left(x - \frac{1}{x}\right)^2 = 9$$

$$x^2 + \frac{1}{x^2} - 2 = 9$$

$$x^2 + \frac{1}{x^2} = 11$$

$$f(-3) = 11$$

$$g(x) = \sqrt{9-x^2}$$

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

$$9-x^2 \geq 0$$

$$D_g \cap D_f = \{1, 1, 0\}$$

$$\sqrt{9-4} = \sqrt{5}$$

$$\sqrt{9-0} = \sqrt{9} = 3$$

$$9 \geq x^2$$

$$\sqrt{9-1} = \sqrt{8} = 2\sqrt{2}$$

$$-3 \leq x \leq 3$$

$$a) \frac{f}{g} = \{(1,0), (1, \frac{2}{\sqrt{5}}), (0, \frac{2}{3})\}$$

$$0 \leq \frac{\sqrt{5}}{2}$$

$$b) \frac{g}{f} = \{(1, -\frac{\sqrt{5}}{4}), (0, \frac{3}{4}), (\frac{1}{2}, \frac{\sqrt{5}}{2})\} = \{(1, -\frac{\sqrt{5}}{4}), (0, \frac{3}{4})\}$$

$$a) 2f(x) = \{(1,2), (1,8), (-5,4), (1,-4)\}$$

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

$$c) 3f^2(x)+1 = \{(1,4), (1,49), (-5,13), (1,13)\}$$

$$d) f(2x) = \{(1,1), (1,4), (-1,5), (\frac{1}{2}, -1)\}$$

$$D_g \cap D_f = \{1, 2, 3\}$$

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

$$b) \frac{2f}{g} = \{(1, \frac{8}{5}), (2, 4), (3, -2)\} = \{(1, \frac{8}{5}), (3, -2)\}$$