

$$y = \sqrt{x f(x)} \Rightarrow x f(x) \geq 0 \Rightarrow D_f = [-4, 5] - ([x, -5] \cup [0, 2])$$

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

$$D_f = (-3, 0) \cup (0, 2)$$

↓

$$\frac{-x}{f(x)} \geq 0 \begin{cases} 0 \leq x, f(x) < 0 \\ 0 \geq x, f(x) > 0 \end{cases}$$

$$A = \{1, -1, -2\} \quad n(A) = \boxed{3}$$

$$f(x) - 2f(r) = x^r - 2x + f \Rightarrow x = r \Rightarrow f(r) - 2f(r) = f - 2 + f \Rightarrow f(r) = -2$$

$$x = -2 \Rightarrow f(-2) - 2(-2) = f + 4 + f = 1f$$

$$f(-2) + f = 1f \Rightarrow f(-2) = 0$$

$$\underbrace{f(f(5))}_{=f(r)=\textcircled{v}} + \underbrace{f(f(1))}_{=f(2)=\textcircled{r}} = 4 + 2 = 6$$

$$f(x) \Rightarrow x-1 \Rightarrow r+a-b \mid x=1 \Rightarrow f(x-1)=2$$

$$f(x-1) - f(x) = 4x+2 \Rightarrow r - (r+a-b) = 4+2 \Rightarrow a-b = 4$$

$$r-b-b+1-r$$

$$y = \sqrt{x f(x)} \Rightarrow x f(x) \geq 0 \Rightarrow D_f = [-4, 5] - ([x, -5] \cup [0, 2])$$

-1

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

-2

$$\frac{-x}{f(x)} \geq 0 \begin{cases} 0 \leq x, f(x) < 0 \\ 0 \geq x, f(x) > 0 \end{cases} \quad D_f = (-3, 0) \cup (0, 2)$$

↓

$$A = \{1, -1, -2\} \quad n(A) = \boxed{3}$$

$$f(x) - 2f(r) = x^r - 2x + f \Rightarrow x = r \Rightarrow f(r) - 2f(r) = f - 2 + f \Rightarrow f(r) = -2$$

-3

$$\downarrow x = -2 \Rightarrow f(-2) - 2(-2) = f + 4 + f = 1f$$

$$f(-2) + f = 1f \Rightarrow f(-2) = 0$$

$$\underbrace{f(f(5))}_{= f(r) = (V)} + \underbrace{f(f(1))}_{= f(2) = (2)} = 4 + 2 = 9$$

-4

$$f(x) \rightarrow x-1 \Rightarrow r+a-b \mid x=1 \Rightarrow f(x-1) = r$$

-5

$$f(x-1) - f(x) = 4x+2 \rightarrow r - (r+a-b) = 4+2 \Rightarrow a-b = 2$$

$$r = b - a + 2$$

$$f(x) = \frac{x^2 + 4x + 2}{x^2 + 4x + 7}$$

-6

$$f(\sqrt{2} - 2) = \frac{(\sqrt{2}-2)^2 + 4(\sqrt{2}-2) + 2}{(\sqrt{2}-2)^2 + 4(\sqrt{2}-2) + 7} = \frac{2 - 4\sqrt{2} + 4 + 4\sqrt{2} - 8 + 2}{2 - 4\sqrt{2} + 4 + 4\sqrt{2} - 8 + 7} = \frac{0}{1} = 0$$

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

-5

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-2 \pm \sqrt{4 + 4}}{2} \Rightarrow \frac{(-2 \pm \sqrt{8})}{2} \Rightarrow \frac{(-2 \pm 2\sqrt{2})}{2} = -1 \pm \sqrt{2}$$

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

$$x^2 \leq 9$$

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

$$Df = [-3, 3]$$

$$Df \cap Dg = \{1, 0, 1\}$$

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

-1

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

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

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

$$f(x) = \{(2, 2), (3, 1), (-5, 4), (1, -4)\}$$

-9

$$f(x) + 1 = \{(2, 3), (3, 2), (-5, 5), (1, -3)\}$$

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

$$f(x) = \{(2, 1), (3, 2), (-5, 2), (2, -2)\}$$

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

-10

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