

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

$$y = \sqrt{x} f(x+1) \rightarrow f(x+1) = \left(\frac{1}{x+1}\right)^{x+1} \Rightarrow 2\left(\frac{1}{x}\right)^x - 1 \Rightarrow 2x^2 \left(\frac{1}{x}\right)^x \geq x^2 \rightarrow D_f = [1, \infty)$$

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

$$f(-x) = \sqrt{-x + |2-x|} \rightarrow \begin{cases} 2-x \geq x \\ 2-x \leq x \end{cases} \rightarrow D_f = (-\infty, 1] \cup [2, \infty)$$

	-4	-1	2	3
$x-1$	-	-	+	+
$f(x)$	+	-	-	+
$\frac{x-1}{f(x)}$	-	+	-	+

$D_f = (-4, 1] \cup (2, 3)$

$$y_1 = \frac{1}{9x^2 - 7x^2 - 4x - 3} \rightarrow \frac{1}{9}b^2 - \frac{1}{9}b^2 - \frac{1}{3}b - 3 = \frac{1}{9}b^2 + \frac{1}{3}ab + b$$

$$y = \frac{1}{3x^2 + ax + b}$$

$$b = -3, a = -4 \rightarrow \sqrt{(a+b)} \rightarrow \sqrt{V}$$

$$f(x) = x^2 + x$$

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

$$D_f = [1, +\infty) \cup (-1, 0)$$

$$f(x^w + x) = 2x^w - 1 \rightarrow x(x^w + 1) = 2x^w - 1$$

$$\hookrightarrow \boxed{x=1} \rightarrow f(1) = 1$$

$$x(x^w + 1) \rightarrow \boxed{x=2} \rightarrow f(10) = 19$$

$$f(1) + f(10) = 20$$

$$f(x) = x^w - 9x^w + 12x \rightarrow (x-2)^w - 4$$

$$g(x) = x^w + 9x^w + 24x \rightarrow (x+3)^w - 24$$

$$\frac{g(\sqrt{w} - 2)}{f(\sqrt{w} + 2)} = \frac{-20}{-4} = 5$$

$$f(x) = \sqrt{x+5} \sqrt{x-5} \rightarrow$$

$$g(x) = \sqrt{x-5} \sqrt{x-5} \rightarrow$$

$$\left\{ \begin{array}{l} \sqrt{x-5} + 2 \\ \sqrt{x-5} - 2 \end{array} \right\}$$

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

$$x \geq 5$$

$$\hookrightarrow 2\sqrt{x-5} \rightarrow \left\{ \begin{array}{l} a=0 \\ b=2 \\ c=-5 \end{array} \right\} \rightarrow \frac{a+b}{c} = \frac{-1}{2}$$

$$f(x) = \frac{x+2}{x^2 - 5x + 6}$$

$$\left\{ \begin{array}{l} x \neq 1 \\ x \neq 6 \end{array} \right\}$$

$$\rightarrow \left\{ \begin{array}{l} x=0 \rightarrow \frac{2}{6} \\ x=2 \rightarrow \frac{4}{-1} = -4 \end{array} \right\}$$

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

$$f = \{(1,2)(2,-1)(3,2)(-6,4)\}$$

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

$$g^2(x+1) = \{(\frac{\sqrt{x+1}}{2}, -1)(\frac{\sqrt{x+1}}{2}, 2)\}$$

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

$$\frac{f}{g} = \{(1,4)(2,-2)(3,2)(-1,12)\}$$

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

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