

$$2. \sqrt{f(x)-x+1} ; f(x) \rightarrow 2x-1 ; [x] \geq \frac{1}{2} \quad \left(D_y \left[-\frac{1}{2}, \frac{1}{2} \right] \right)$$

$$f(x)-x+1 \geq 0 \quad \left\{ \begin{array}{l} 2x-1 \geq 0 \\ 2x+3 \geq 0 \end{array} \right. \quad \left(\frac{1}{2}, \infty \right)$$

$$\begin{array}{l} [x] \geq \frac{1}{2} \rightarrow 2x-1-x+1 \geq 0 \rightarrow x \geq 0 \rightarrow x \geq \frac{1}{2} \\ [x] \leq \frac{1}{2} \rightarrow 2x+3-x+1 \geq 0 \rightarrow x \geq -2 \rightarrow x \geq -\frac{1}{2} \rightarrow x \geq -\frac{1}{2} \end{array}$$

$$2. \frac{2x^2+3x+1}{(x^2+x+1)^2} \sim \frac{3(1x^2+12x^2+6x+1)}{(2x+1)^2} \sim \frac{3(2x+1)^2}{(2x+1)^2}$$

$$2. \frac{3}{2x+1} \rightarrow 2x+1 \neq 0 \rightarrow D_y \left[R - \{-0/\infty\} \right]$$

$$2x \neq -1 \rightarrow x \neq -0.5$$

$$f(x) \rightarrow \frac{x^2+2x-1}{x^2-1} ; x \neq \pm 1$$

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

$$\rightarrow \frac{x^2+2x-1}{(x+1)(x-1)} = \frac{x^2-1+2x}{(x+1)(x-1)} = \frac{(x-1)(x+1)+2x}{(x+1)(x-1)} = \frac{x-1}{x-1} + \frac{2x}{(x+1)(x-1)} = 1 + \frac{2x}{(x+1)(x-1)}$$

$$\frac{2x}{(x+1)(x-1)} = \frac{A}{x+1} + \frac{B}{x-1} \rightarrow 2x = A(x-1) + B(x+1) \rightarrow 2x = Ax - A + Bx + B \rightarrow 2x = (A+B)x + (B-A)$$

$$\begin{cases} A+B=2 \\ B-A=0 \end{cases} \rightarrow \begin{cases} A=1 \\ B=1 \end{cases}$$

$$\frac{2x}{(x+1)(x-1)} = \frac{1}{x+1} + \frac{1}{x-1}$$

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

$$f(x) = \frac{x+1}{x-1} \rightarrow D_y \left[R - \{1\} \right]$$

$$\frac{x+1}{x-1} = \frac{(x-1)+2}{x-1} = 1 + \frac{2}{x-1}$$

$$\frac{2}{x-1} = \frac{A}{x-1} \rightarrow A=2$$

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

$$f(x) = (x-2)^2(x-1) / 2(x) = f(x+1) + f(1-x)$$

$$2(x-2)^2(x-1) = (x-1)^2 + (x+2)^2 - x(x^2+5x+4) / (x^2+5x+4)$$

$$x(x^2+5x+4) = x^3+5x^2+4x$$

$$x^3+5x^2+4x = x^3+5x^2+4x$$

$$f(1-x) = \begin{cases} \sqrt{x+1} & ; x \leq 0 \\ \sqrt{x} & ; x > 0 \end{cases} \quad f(-1) + f(1) = ?$$

$$1-x = -1 \rightarrow -x = -2 \rightarrow x = 2 \rightarrow \sqrt{2} \quad (2) \\ 1-x = 1 \rightarrow -x = 0 \rightarrow x = 0 \rightarrow \sqrt{-1+1} = 0 \quad (1)$$

$$f(x+\sqrt{x}) = x+3x \quad f(x) = ?$$

$$y = x + \sqrt{x} \rightarrow x = y \rightarrow \sqrt{y+1} = y+1 \quad \boxed{y+1}$$

$$f(x) = x^3 + x \rightarrow f(x-1) + f(1-x) = ?$$

$$(x-1)^3 + (x-1) + (1-x)^3 + (1-x) \\ \rightarrow x^3 + 3x^2 - 3x - 1 + 1 + 3x^2 - 3x - 1 + 1 - x = 0$$

$$f(x) = \sqrt{5x-12} + 1 \quad g(x) = \sqrt{5-x} + 3x$$

$$D_f = \{ (1, 4) \} \rightarrow D_f \cap D_g = \{ 1 \} \quad 5a - \frac{b}{5} - 1 \leq 1$$

$$5x - 12 \geq 0 \rightarrow x \geq \frac{12}{5} \rightarrow \frac{12}{5} \leq \frac{b}{5} \leq 1 \rightarrow a = \frac{12}{5}$$

$$5 - x \geq 0 \rightarrow x \leq \frac{5}{5} \quad (1, 4) \rightarrow 2K + 1 \rightarrow K = 1$$

$$f(x) = \sqrt{m-x} + n \quad g(x) = \sqrt{2x+1} \quad D_g = [-1, +\infty)$$

$$D_g \cap D_f = [-1, V] \rightarrow D_f = (-\infty, V] \rightarrow m-x \geq 0$$

$$f = g(1) = 9\sqrt{1} \rightarrow \boxed{n+m}, \boxed{1\sqrt{1+0}} \quad \boxed{m, V} \quad m \geq x$$

$$\sqrt{V-x} + n = \sqrt{2x+1} \rightarrow V + n - \sqrt{2x+1} = 9\sqrt{1} \rightarrow \boxed{n = \sqrt{2x+1} - 9}$$