

$$\left\{ \begin{array}{l} x > 0 \quad \sqrt{2x-1} - x+1 = \sqrt{x} \rightarrow x > 0 \\ x < 0 \quad \sqrt{2x+3} - x+1 = \sqrt{x+1} \rightarrow x < -1 \\ \text{و } -\frac{1}{2} < x < 0 \end{array} \right\} \rightarrow D = \left[-\frac{1}{2}, \infty\right)$$

$$\frac{2x^2 + 3x + 1}{(2x+1)^2} = \frac{3(1x^2 + 12x^2 + 4x + 1)}{(2x+1)^2}$$

$$= \frac{3(2x+1)^2}{(2x+1)^2} = \frac{3}{2x+1} \Rightarrow 2x+1 \neq 0 \Rightarrow x \neq -\frac{1}{2}$$

$$D = \mathbb{R} - \left\{-\frac{1}{2}\right\}$$

$$\frac{(x+1)(x-1)}{(x-1)^2} = \frac{x+1}{x-1} \rightarrow c=1 \Rightarrow a+b+c=0$$

$$x+1-2x \Rightarrow b=1, a=-2$$

$$x=0 \rightarrow \frac{0+1-0-1}{0-1} = 2 = a+c \Rightarrow c=-2$$

$$x=1 \rightarrow \frac{a+2}{b+1} = 1 \quad c=2 \quad 3 \Rightarrow a+2 = 3b+3$$

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

$$b \text{ و } c = \frac{1}{2} + 2 = \frac{5}{2} = 2.5$$

$$f = 3b+2$$

$$3b = 2 \Rightarrow b = \frac{2}{3}$$

$$f(x+1) = (x-2)^2(x), \quad f(1-x) = (-x-2)^2(-x)$$

$$x^3 - 4x^2 + 4x - x^3 - 4x^2 - 4x = -8x^2$$

$$1 - 2x = -1 \Rightarrow x = 1 \Rightarrow f(-1) = 1 \quad \checkmark$$

$$1 - 2x = 3 \Rightarrow x = -1 \Rightarrow f(3) = 1 \quad \checkmark$$

$$x + \sqrt{x} = 4 \Rightarrow x = 9 \Rightarrow f(4) = 4^2 + 2(4) = 20 \quad \checkmark$$

$$(x-1)^3 + (x-1) + (1-x)^3 + (1-x)$$

$$= x^3 - x^2 + x - 1 + x - 1 + 1 - x + x^2 - x^3 + 1 - x = 0 \quad \checkmark$$

$$x \in \mathbb{R} \Rightarrow x \in \mathbb{R}$$

$$2a - 2a > 0 \Rightarrow a > \frac{a}{2}$$

$$\left(\frac{a}{2}, \frac{b}{2} \right)$$

$$b - 2a > 0 \Rightarrow \frac{b}{2} > a$$

$$\frac{a}{2} = \frac{b}{2} = 1 \Rightarrow a = 2, b = 2 \quad \checkmark$$

$$f(x) = y = \{(b, k)\} \Rightarrow y(k-1) - 3k = k \quad f(k) = 2 \quad k = -1$$

$$\Rightarrow 1 = \frac{k}{2}$$

$$2a - \frac{b}{2} - 1 = 2 - 2 - \frac{1}{2} = -\frac{1}{2} \quad \checkmark$$

$$m - x > 0 \Rightarrow x < m \quad \checkmark$$

$$2x + y > 0 \Rightarrow x > -1$$

$$\Rightarrow m \in \mathbb{R} \quad \checkmark$$

$$(f \circ g)(x) = 4\sqrt{x} \Rightarrow f(x) = 2 + x, g(x) = 2\sqrt{x}$$

$$2 + x - 2\sqrt{x} = 4\sqrt{x}$$

$$m \in \mathbb{R} \quad \checkmark$$

$$m = 4\sqrt{x} - 2 \quad \checkmark$$

Arman

$$\Rightarrow m \in \mathbb{R} = 4\sqrt{x} - 2 = 4 + 4\sqrt{x} \quad \checkmark$$