

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

$$x \geq 0$$

$$x < 0 \Rightarrow 4x^3 - x + 1 \geq 0 \quad \left. \begin{array}{l} x > 0 \\ x \geq \frac{1}{4} \end{array} \right\} x \geq -\frac{1}{4} \checkmark$$

$$3x \geq -1$$

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

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

$$\frac{(3 + 2x)(4x^2 + 4x + 1)}{(4x^2 + 4x + 1)^2} = \frac{3 + 2x}{(1 + 2x)^2} \quad x \in \mathbb{R} - \left\{-\frac{1}{2}\right\} \checkmark$$

$$\frac{(x^2 - 1)(x + 2)}{-x^2 - 1} = x + c \Rightarrow c = 2 \quad c + b = 2 + \frac{1}{2} = \frac{5}{2}$$

$$g(1) = 1 + 2 = 3$$

$$\frac{a + 2}{1 + b} = 3$$

$$\frac{2 - a}{b - 1} = 1 \Rightarrow \begin{array}{l} a + 2 = 3 + 3b \\ -2 + a = -b + 1 \\ b = \frac{1}{2} \quad a = \frac{1}{2} \checkmark \end{array}$$

$$(x - 2)(x - 1) = x^2 - (c + 1)x + c$$

$$\begin{array}{l} x^2 - 2x + 1 \\ a = -2 \quad b = 1 \end{array}$$

$$1 + (-2) + 1 = 0 \checkmark$$

$$f(x + 1) = (x - 2)^2(x) = x^3 - 4x^2 + 4x$$

$$f(1 - x) = (-x - 2)^2(1 - x) = -(x^3 + 4x^2 + 4x)$$

$$g(x) = \underline{x^3} - 4x^2 + 4x - \underline{x^3} - 4x^2 - 4x = -8x^2 \checkmark$$

$$1 - 2x = -1 \quad x = 1 \quad f(-1) = 4\sqrt{1} = 4$$

$$1 - 2x = 3 \quad x = -1 \quad f(3) = \sqrt[3]{3-1} + 2 = 1 \quad \underline{f+1=0} \checkmark$$

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

$$x = 4$$

$$4 + \sqrt{4} = 4 + 2 = 6 \neq 4 \quad \checkmark$$

↓
 انما $x - 4 = -\sqrt{x}$
 $x^2 - 12x + 16 = 0 \Rightarrow x = 4, 9$ ↑ $\in \mathbb{R}$

$$x - 1 = t$$

$$f(t) + f(-t) = t^2 + t + (-t^2) + (-t) = 0 \checkmark$$

$$x=1 \Rightarrow b - 4a = 0 \quad b = 4$$

$$\Rightarrow 4a - 4a = 0 \quad a = \frac{4}{4}$$

$$2f(1) - g(1) = 2(1-1-1) = -2 \neq 1 \quad k = -1$$

$$2\left(\frac{4}{4}\right) - \frac{4}{4} - (-1) = 1 \checkmark$$

$$Df(x) \Rightarrow \text{المشتقة} \Rightarrow m = \frac{y}{x} = 0$$

$$Dg(x) \Rightarrow \text{المشتقة} \Rightarrow -1 = x$$

$$m+n = 1 + \sqrt{2} \checkmark$$

$$f - g(x) = -\sqrt{4+x} + \sqrt{4-x} + n = 4\sqrt{2}$$

$$n = 4 + 4\sqrt{2}$$