

ساده و مستقیم

توجه داشته باشید

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$$g(x) = \sqrt{-x^2 + 4x - 4} \Rightarrow -x^2 + 4x - 4 \geq 0 \Rightarrow -(x-2)^2 \geq 0 \Rightarrow x-2 \leq 0 \Rightarrow x \leq 2$$

$$f(x) = 2 \Rightarrow \sqrt{10} x^{\frac{1}{2}} = 2 \Rightarrow 10 x^{\frac{1}{2}} = 4 \Rightarrow x^{\frac{1}{2}} = \frac{2}{5} \Rightarrow x = \frac{4}{25}$$

$$g \circ f = (2x - 2)^2 - 2(2x - 2) + 8 = 4x^2 - 4x + 4 - 4x + 4 + 8 = 4x^2 - 8x + 16 = 4(x^2 - 2x + 4)$$

$$f \circ g = 2(x^2 - 2x + 4) - 2 = 2x^2 - 4x + 8 - 2 = 2x^2 - 4x + 6$$

$$\Rightarrow 2x^2 - 4x + 6 = 4x^2 - 8x + 16 \Rightarrow 2x^2 - 4x + 10 = 0 \Rightarrow x^2 - 2x + 5 = 0$$

$$\Delta = 4 - 20 = -16 < 0 \Rightarrow \text{No real roots}$$

$$g(f(x)) = 4x^2 - 8x + 16 \Rightarrow g(2x) = 4(2x)^2 - 8(2x) + 16 = 16x^2 - 16x + 16$$

$$m_{xy} = \frac{1}{2} \Rightarrow \text{Slope of the line passing through } (0, 1) \text{ and } (1, 0)$$

$$f(g(x)) = 2x^2 - 4x + 6 \Rightarrow f(2x) = 2(2x)^2 - 4(2x) + 6 = 8x^2 - 8x + 6$$

$$g(f(x)) = 4x^2 - 8x + 16 \Rightarrow g(2x) = 4(2x)^2 - 8(2x) + 16 = 16x^2 - 16x + 16$$

$$f - g = ax + b \Rightarrow \frac{a}{-1} = -1 \Rightarrow a = 1 \Rightarrow b = 1 \Rightarrow f - g = x + 1$$

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

$$g(x) = 10g^2 \Rightarrow f(g(x)) = 9g^2 = 10g^2 \Rightarrow g^2 = 0 \Rightarrow g = 0 \Rightarrow x = 0$$

$$g(f(x)) \geq f(g(x)) \Rightarrow 2x \geq x^2 \Rightarrow x^2 - 2x \leq 0 \Rightarrow x(x - 2) \leq 0 \Rightarrow 0 \leq x \leq 2$$

$$f\left(\frac{x-1}{x}\right) = x^2 + x - 2 - \frac{1}{x} + \frac{2}{x^2} = x^2 - \frac{1}{x} + x + \frac{2}{x^2} - 2 = \frac{x^4 - x + x^3 + 2 - 2x^2}{x^2}$$

$$f(t), t+t \Rightarrow f(x) = x^2 + x$$

$$g(x) = 10x - x^2, f(x) = 10g^2 \Rightarrow f(g(x)) = 10(10x - x^2)^2 = 10(100x^2 - 20x^3 + x^4) = 1000x^2 - 200x^3 + 10x^4$$

$$kg = (-\infty, 1] \Rightarrow 10g^{10x - x^2} = 10g^{(-\infty, 1]} \Rightarrow kg = (-\infty, 1]$$

$$f(x) = 10x - x^2, f(1) = 10(1) - 1^2 = 9, f(0) = 10(0) - 0^2 = 0$$

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$$f(\alpha) = 1 - \int_0^1 f(x) g(x) dx, \quad 1 - \int_0^1 f(x) g(x) dx = 1 - \int_0^1 f(x) g(x) dx$$

$$f(f(a)) = f(1) = 1 - 1^2 = 0 \Rightarrow f^{-1}(0) = 1$$

$$\Rightarrow x^m - \cancel{x^{m-1} + x^{m-2} + \dots + x + 1} + x^m - 1 \Rightarrow x^m + x^m - x^m = 0$$

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$$f(x) = x - \frac{a}{f} \quad , \quad g(f(x)) = a \quad , \quad f + r \quad , \quad g(r) = A$$

$\alpha = 0$ $\leftarrow$ $V = V + \alpha h$ $\leftarrow$ $\alpha = 1$
 $\alpha = -1$ $\leftarrow$ $V = 1 - \alpha - \leftarrow$ $\alpha = 1$

$$a = -1$$

$\bullet = 0$

$$g(r) = g(f(-1)) = a \cdot r + r \cdot a = -a + r = 1 \Rightarrow a = -1$$

$$1 - \frac{1}{1-x} \leq x \Leftrightarrow 0 = (1-x)(1+x) \Leftrightarrow 0 = 1 - x^2 \Leftrightarrow x \leq 1 \wedge x \geq -1$$

$X \rightarrow Y$

①

