

$$f(x) = 2x - 1 \rightarrow f(g(x)) = 2g(x) - 1$$

$$\rightarrow 2g(x) - 1 = 2x - 1$$

$$\rightarrow 2g(x) = 2x \rightarrow g(x) = x$$

$$g(f(x)) = (2x - 1) = 2x - 1$$

$$\Rightarrow 2x - 1 = 2x - 1$$

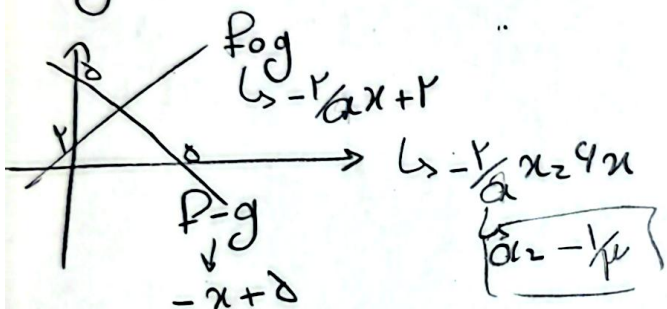
$$f(x) - g(x) = x + \delta$$

$$\rightarrow f(x) - g(x) = x + \delta$$

$$f(x) - g(x) = x + \delta$$

$$g(x) = x - 1, f(x) = x + \varepsilon$$

$$f(g(x)) = f(x - 1) + \varepsilon = x + \varepsilon$$



$$f(g(x)) = 2g(x) - 1 \rightarrow 2x - 1 = x$$

$$g(f(x)) = 2x - 1 = x$$

$$\rightarrow 2x - 1 = x \rightarrow x = 1$$

$$\Rightarrow [0, 1]$$

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

$$\left(\frac{x-1}{2}\right) + \varepsilon \rightarrow \frac{x-1}{2} + \varepsilon$$

$$\Rightarrow f(x) = x + \varepsilon$$

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$$f(x) = \sqrt{x-1} \rightarrow x \geq 1$$

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

$$-(\sqrt{x-1} - 1)^2 \geq 0 \rightarrow (\sqrt{x-1} - 1)^2 \leq 0$$

$$\Rightarrow \sqrt{x-1} = 1 \rightarrow x-1 = 1 \rightarrow x = 2$$

$$Dg \circ f(x) = \frac{1}{2\sqrt{x-1}} \rightarrow \frac{1}{2\sqrt{x-1}}$$

$$f(g(x)) = f(x-1) = \sqrt{x-1} - 1$$

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

$$= \varepsilon x^2 - 2\varepsilon x + \varepsilon$$

$$g(f(x)) = f(g(x)) = \varepsilon x^2 - 2\varepsilon x + \varepsilon = 2x - 1$$

$$\rightarrow 2x - 1 = 2x - 1$$

$$a^2 + b^2 \rightarrow (a+b)^2 \rightarrow 1 + 2\sqrt{ab} + b^2$$

$$g \circ f(x) = g(x) = \frac{x}{2} + 1 \rightarrow \frac{x}{2} + 1$$

$$x = \frac{x}{2}$$

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

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

$$\rightarrow \frac{b}{2a} = \frac{1}{2} = \frac{1}{2}$$

$$\rightarrow g(x-1) = \frac{\varepsilon \varepsilon}{\varepsilon} = \varepsilon$$

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

$$1-x > 0 \rightarrow \frac{1}{1+x} \rightarrow Df_{\log} = (0, 1)$$

$$\text{Ex } \left\{ \frac{1}{14} \rightarrow \frac{1}{14} \approx \frac{1}{10} \Rightarrow P_{f_{\log}}(-\infty, \frac{1}{10}] \right\}$$

$$\Rightarrow D \cap P = (0, \frac{1}{10}] \rightarrow \boxed{[0, \frac{1}{10}, \frac{1}{10}]}$$

عوضه

$$h(x) = x^k + kx + 1 \quad -9$$

$$g(x) = x - 1$$

$$f \circ h(x) = 1 - (h(x))^k \rightarrow 1 - (x^k + kx + 1)^k$$

$$x^k - (x^k + kx + 1)^k + \partial x - 1 = 1 - (x^k + kx + 1)^k \rightarrow x^k + \partial x - k = 0$$

توابع درجه ۳ مثل تابع بالا
را قطع می کند یک ریشه دارد!

$$g \circ f(x) = x^k + kx \rightarrow g(x - \frac{\epsilon}{k}) = x^k + kx \quad -10$$

$$x - \frac{\epsilon}{k} = k \rightarrow x = 1$$

$\hookrightarrow x = \epsilon$

$$x = 1 \rightarrow g(k) = -\alpha - 1 \rightarrow \alpha = -1$$

$$x = \epsilon \rightarrow g(k) = \epsilon \alpha + 1 \rightarrow \alpha = 0$$

$$\boxed{\alpha = -1, 0}$$