

$$f(x) = \sqrt{-x^2 + 4x - 4} \quad f(x) = \sqrt{\log_2(x-1)} \quad (D_{f \circ g}(x) = \{5\})$$

$$g \circ f(x) = g(f(x)) \quad \log_2(x-1) = 2 \Rightarrow 2^2 = x-1 \Rightarrow x=5$$

این عبارت همواره منفی است پس فقط ۲
 $-x^2 + 4x - 4 \geq 0 \Rightarrow$ و به ازای ۲ منفی است $\Rightarrow$ این عبارت منفی است

$$f(x) = x^3 - 3x + 1 \quad f(x) = 2x - 5$$

$$f \circ g(x) = f(g(x)) = 2(x^3 - 3x + 1) - 5 = 2x^3 - 4x + 2 - 5 = 2x^3 - 4x - 3$$

$$g \circ f(x) = g(f(x)) = (2x - 5)^3 - 3(2x - 5) + 1 = 8x^3 - 40x^2 + 24x - 11$$

$$f \circ g(x) = g \circ f(x) \Rightarrow 2x^3 - 4x - 3 = 8x^3 - 40x^2 + 24x - 11$$

$$f(x) = 2x \quad g \circ f(x) = 5x^2 + 11$$

$$g(f(x)) = 5x^2 + 11 \Rightarrow g(2x) = 5x^2 + 11 \Rightarrow 2x = t \Rightarrow x = \frac{t}{2}$$

$$g(t) = 5\left(\frac{t}{2}\right)^2 + 11 \Rightarrow g(t) = \frac{5t^2}{4} + 11 \Rightarrow g(x) = \frac{5x^2}{4} + 11$$

$$g(x-v) \Rightarrow \frac{5}{4}(x-v)^2 + 11 \Rightarrow \frac{5}{4}x^2 - \frac{5}{2}x + \frac{5}{4}v^2 + 11 = 11$$

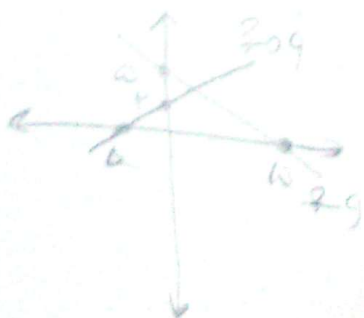
$$f \circ g(x) = 3x^2 - 4x - 1 \quad f(x) = 3x - 2$$

$$f(g(x)) = 3(3x^2 - 4x - 1) - 2 = 9x^2 - 12x - 3 - 2 = 9x^2 - 12x - 5$$

$$g(x) = x^3 - x - \frac{5}{3}$$

$$g \circ f(x) = g(f(x)) = g(3x - 2) = (3x - 2)^3 - (3x - 2) - \frac{5}{3} = 27x^3 - 54x^2 + 36x - 8 - 3x + 2 - \frac{5}{3} = 27x^3 - 54x^2 + 33x - \frac{17}{3}$$

$$f \circ g(x) = 9x^2 - 12x - 5 \quad \text{و به ازای ۵}$$



$$f \circ g(x) = 0 \Rightarrow f(g(x)) = 0$$

$$f(0) = g(0) = 5 \Rightarrow f(0) = g(0) + 5$$

$f \circ g(x) \Rightarrow f(\log_p x) = q^{\log_p x} \Rightarrow x^{\log_p q} = x^r$ $g \circ f(x) \Rightarrow g(q^x) = \log_p q^x = \log_p p^{rx} = rx \log_p p = rx$ $f \circ g(x) \leq g \circ f(x) \Rightarrow x^r \leq rx \rightarrow \boxed{[0, r]}$	f
$f\left(\frac{x^r - r}{x}\right) = x^r + x - r - \frac{r}{x} + \frac{f}{x^r}$	v
$f \circ g(x) = f(\underbrace{g(x)}_{1-x-x^r}) \Rightarrow f(1-x-x^r) = \log_p x$ $1-x-x^r > 0 \rightarrow x(1-x) > 0 \rightarrow \frac{0}{-1+1} \Rightarrow D_{f \circ g} = (0, 1) = A$ $R_{f \circ g} = (-\infty, r) = B \quad \boxed{A \cap B = (0, r)}$	Λ
$h(\underbrace{g(x)}_{x-1}) \Rightarrow h(x-1) = x^r + rx + 1 \xrightarrow[x=t+1]{x-1=t} h(t) = (t+1)^r + r(t+1) + 1$ $h(t) = t^r + rt^r + \omega t + \epsilon$ $h(x) = x^r + rx^r + \omega x + \epsilon$	q
$g(r) = 1 \quad g \circ f(x) = ax^r + rx \quad f(x) = x - \frac{f}{2x}$ $g(f(x)) = a x^r + rx$ $f(x) = r \Rightarrow x - \frac{f}{x} = r \Rightarrow 2x = r \Rightarrow \frac{f}{x} = r$ $a(r)^r + r(r) = 1 \Rightarrow r(ar + 1) = 1 \Rightarrow \boxed{a = q}$	1.