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نام و نام خانوادگی با سبند شماره کلاس
 پاسخنامه تشریحی تکلیف شماره
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$$D_{g \circ f}(u) \Rightarrow \{u \in D_f : f(u) \in D_g\} \Rightarrow D_f \Rightarrow \sqrt{b \cdot y^{n-1} - u-1} \rightarrow u-1$$

$$\rightarrow b \cdot y^{n-1} > 0 \rightarrow n-1 > 0 \rightarrow n > 1 \quad D_{g \circ f}(u) = \{14\}$$

$$D_g \Rightarrow \sqrt{-(u-1)^2} \Rightarrow D_g = \{1\} \quad f(u) \in D_g \Rightarrow \sqrt{b \cdot y^{n-1} - u-1} = 1 \rightarrow b \cdot y^{n-1} - u-1 = 1$$

$$f \circ g(u) = g \circ f(u) \Rightarrow 10u^2 - 5u + 19 - u = 5u^2 - 2u + 19 - 5u + 19 + 1$$

$$g(u) = 10u^2 - 5u + 19 \Rightarrow 10u^2 - 5u + 19 = 5u^2 - 2u + 19 \Rightarrow 10u^2 - 5u + 19 = 5u^2 - 2u + 19$$

$$f(u) = 10u^2 - 5u$$

$$a^2 + b^2 = (s + r\rho)^2 = \left(-\frac{b}{a}\right)^2 + r^2 \frac{c}{a} = \left(\frac{r}{a}\right)^2 + r^2 = 14$$

$$\hookrightarrow s^2 - r^2 = 100 - 14 = 86$$

$$\left. \begin{array}{l} g \circ f(u) = a u^2 + 11 \\ f(u) = 10u \end{array} \right\} \Rightarrow g(f(u)) = a u^2 + 11 \Rightarrow g(u) = a \left(\frac{u}{10}\right)^2 + 11 = \frac{a u^2}{100} + 11$$

$$\Rightarrow g(u-1) = \frac{a(u-1)^2}{100} + 11 = \dots \Rightarrow \dots$$

$$f(u) = 10u - 1$$

$$f(g(u)) = 10g - 1 = 10u^2 - 5u - 1 \Rightarrow 10g = 10u^2 - 5u + 1 \Rightarrow g = u^2 - \frac{1}{2}u + \frac{1}{10}$$

$$\Rightarrow g(u) = (u-1)^2 \quad g \circ f(u) = ((10u-1)-1)^2 = (10u-2)^2$$

$$g \circ f(u) = 10u^2 - 5u + 1$$

$$f - g(u) = au + b \Rightarrow a(0) + b = a \Rightarrow b = a$$

$$f(u) = 10u + 1 \quad (0, a) \Rightarrow 10a + a = 0 + a \Rightarrow a = -1$$

$$g(u) = 10u - 1 \quad (a, 0) \Rightarrow 10a - 1 = 0 - 1 \Rightarrow a = 0$$

$$f \circ g(u) = 10u + 1$$

$$f \circ g(u) = \frac{1}{a}u - 1 \rightarrow a = -\frac{1}{1}$$

$$f(x) = a^x : g(x) = a \cdot g_r^x \quad f \circ g(x) = a^x \quad g \circ f(x) = x$$

$$f \circ g(x) \leq g \circ f(x) \Rightarrow a^{a \cdot g_r^x} \leq a \cdot g_r^a \Rightarrow x^{a \cdot g_r^x} \leq a \cdot g_r^a \Rightarrow a^x \leq x$$

$$\Rightarrow -\sqrt{x} \leq x \leq \sqrt{x} \Rightarrow \{-1, 0, 1\} \rightarrow \text{جواب نهایی}$$

$$f\left(\frac{x^2-5}{x}\right) = \frac{x^2-5}{x} - \frac{5}{x} + \frac{x}{x^2} = \frac{x^2-5}{x} + \frac{x}{x^2} - \frac{5}{x}$$

$$\Rightarrow f\left(x - \frac{5}{x}\right) = \left(x - \frac{5}{x}\right)^2 + \left(x - \frac{5}{x}\right) \Rightarrow f(x) = x^2 - x$$

$$f(x) = x^2 + x$$

$$\left. \begin{aligned} f(x) &= \log_r x \\ g(x) &= \log_r x \end{aligned} \right\} f \circ g(x) = \log_r^{1 \log_r x} \rightarrow 1 \log_r x > 0 \rightarrow -\frac{1}{x+1} > 0 \quad (1)$$

$$\frac{x+1}{x} \rightarrow 1 \log_r x > -\frac{1}{x} = \frac{-1}{-x} = \frac{1}{x} \Rightarrow 1(x) - (x)^2 = 1 \Rightarrow \log_r^{1/x} = \frac{1}{x}$$

$$\rightarrow R_f = (-\infty, +\infty] \Rightarrow R_f \cap D_f = A \cap B = [0, +\infty] \rightarrow \text{جواب نهایی}$$

$$D_f = [0, 1]$$

$$f \circ f(x) = 1 - \sqrt{x} + \sqrt{x} \Rightarrow f(f(x)) = 1 - \sqrt{x} + \sqrt{x} \Rightarrow f(x) = 1 - \sqrt{x}$$

$$h \circ g(x) = (x-1)^2 + 2(x-1) + 1 = x^2 - 2x + 1 + 2x - 2 + 1 = x^2 - 2x + 1 = (x-1)^2$$

$$\Rightarrow x^2 - 2x + 1 = 1 - \sqrt{x} \Rightarrow x^2 - 2x = 0 \Rightarrow x(x-2) = 0 \Rightarrow x = 0 \text{ or } x = 2$$

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

$$\left. \begin{aligned} f(x) &= x - \frac{x}{a} \\ g(x) &= ax + r \end{aligned} \right\} \Rightarrow g\left(x - \frac{x}{a}\right) = ax + r$$

$$g\left(x - \frac{x}{a}\right) = ax + r \rightarrow x - \frac{x}{a} = r \rightarrow x \left(1 - \frac{1}{a}\right) = r \rightarrow x = \frac{ar}{1 - \frac{1}{a}} = \frac{ar}{\frac{a-1}{a}} = \frac{a^2 r}{a-1}$$

$$g(1) = 1 \rightarrow a + r = 1 \rightarrow r = 1 - a$$

$$\rightarrow \frac{a^2 (1-a)}{a-1} = 1 \rightarrow a^2 (1-a) = a-1 \rightarrow a^2 - a^3 = a - 1 \rightarrow a^3 - a^2 + a - 1 = 0$$

$$(a-1)(a^2 + 1) = 0 \rightarrow a = 1 \text{ or } a^2 + 1 = 0$$

$$a = 1 \text{ or } a = -1$$