

(تکلیف ۹)

< فاصله شکرانی >

۲۰

(بازدهم دفر)

$$f(n) = \begin{cases} \cot \frac{\pi n}{4} & ; n \leq 1 \\ \sqrt{n^2+1} & ; n > 1 \end{cases}$$

$$f \circ f\left(\frac{1}{4}\right) = f\left(\frac{1}{4}\right) = \cot \frac{\pi \cdot \frac{1}{4}}{4} = \frac{\pi}{4} \rightarrow \sqrt{3}$$

$$f(\sqrt{3}) = \sqrt{(\sqrt{3})^2 + 1} = 2$$

$$\text{الف) } f\left(\frac{1}{n}\right) = \sqrt{\frac{1}{n^2} - 1} = \sqrt{\frac{1}{n^2} - \frac{1}{n^2}}$$

$$\text{ب) } f(n) = [n]$$

$$g(n) = \frac{n}{1-n}$$

$$g(n) = 2 \cos^2 n \quad f(n) = \sqrt{2n - n^2}$$

$$f \circ g(\sqrt{2}) =$$

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

$$f(-1-\sqrt{2}) = [-1-\sqrt{2}] = -1$$

$$g\left(\frac{1}{4}\right) = 2 \cos^2\left(\frac{1}{4}\right) = \frac{1}{4}$$

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

$$f(n) = \sin n \quad g(n) = n \sqrt{1-n^2} \quad g \circ f\left(\frac{\pi}{4}\right) = ?$$

$$g(f(n)) = \sin n \sqrt{1 - \sin^2 n} = \sin \frac{\pi}{4} \left| \cos \frac{\pi}{4} \right| = \frac{\sqrt{2}}{4} \times \frac{\sqrt{2}}{4} = \frac{1}{4}$$

$$\text{الف) } f \circ g(n) \quad \begin{matrix} f \rightarrow 4 \rightarrow \Delta \\ 1 \rightarrow 4 \rightarrow \Delta \\ 4 \rightarrow 8 \rightarrow 12 \\ 8 \rightarrow 16 \rightarrow 12 \end{matrix}$$

$$f \circ g(n) = \{(f,0), (f,0), (4,1), (8,1), (12,1)\}$$

$$g \circ f = \{(f,4), (f,4), (4,8), (8,16), (12,16)\}$$

$$\text{ب) } g \circ f(n) \quad \begin{matrix} f \rightarrow 0 \rightarrow \times \\ 4 \rightarrow 0 \rightarrow \times \\ 8 \rightarrow 12 \rightarrow \times \\ 16 \rightarrow 12 \rightarrow \times \end{matrix}$$

$$g \circ f(n) = \emptyset$$

$$\text{ج) } f \circ f(n) \quad \begin{matrix} f \rightarrow 0 \rightarrow \times \\ 4 \rightarrow 0 \rightarrow \times \\ 8 \rightarrow 12 \rightarrow \times \\ 16 \rightarrow 12 \rightarrow \times \end{matrix}$$

$$f \circ f(n) = \emptyset$$

$$\text{د) } g \circ g(n)$$

$$\begin{matrix} f \rightarrow 4 \rightarrow \Delta \\ 1 \rightarrow 4 \rightarrow 4 \\ 4 \rightarrow 8 \rightarrow 16 \\ 8 \rightarrow 16 \rightarrow \times \end{matrix}$$

$$g \circ g(n) = \{(f,16), (f,16), (4,64), (8,256), (12,256)\}$$

$$f \circ f = \{(f,1), (3,1), (5,0), (1,1)\}$$

$$g = \{(1,1), (3,1), (5,1), (1,1)\}$$

$$(f,1) \in f \circ g \Rightarrow \begin{matrix} g(n) \rightarrow f(n) \rightarrow 1 \\ f(n) \rightarrow g(n) \rightarrow 1 \end{matrix} \quad \begin{matrix} \text{زوج } (a,1) \\ a = 3 \end{matrix}$$

$$(f,1) \in g \circ f \Rightarrow f \rightarrow 1 \rightarrow 1$$

$$(a,b) = ?$$

$$\rightarrow (f,0)$$

$$\text{زوج } (b,1) \text{ برده}$$

$$b = 5$$

$$f(n) = an + b$$

$$a^n + ab + b = f_n + w$$

$$a^r = r^c \quad ab + b = r^w$$

$$\begin{cases} a = \mu \\ b = 1 \end{cases} \quad \vee \quad \begin{cases} a = -\mu \\ b = -\mu \end{cases}$$

$$P_m + P_e t \quad n = t - w$$

$$g(n) = r\left(\frac{t-n}{r}\right) - r = \frac{r t - 1r}{r} \Rightarrow \frac{r n - 1r}{r} = g(n)$$

$$f(n) = \sqrt{n + |n|}$$

$$g(n) = \frac{1}{n^r - cn}$$

$$D_{g \circ f} = \{x \in D_f : f(x) \in D_g\}$$

$$D_f = R$$

$$Dg = R - \{0, 1, r\}$$

$$\{x \in \mathbb{R} \mid \sqrt{n+|x|} \in \mathbb{R} - \{0, \epsilon\}\}$$

$$\sqrt{n+|m|} \neq 0 \leadsto n > 0$$

$$\sqrt{n+|m|} \neq 1^k$$

$$n + |n| \neq 19 \rightarrow n \neq 1$$

$$D_{\text{gof}} = (0, +\infty) - \{1\}$$

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

$$g(x) = \sqrt{x}$$

$$f(x) = \sqrt{1-x^2} \quad 1-x^2 \geq 0 \quad \begin{array}{c} -1 \\ + \\ - \end{array} \quad Df = [-1, +1]$$

$$g(x) = \sqrt{x} \quad x \geq 0 \quad [-1, +\infty) = Dg$$

$$D_{(f+g) \circ f} = \{n \in D_f : f(n) \in D_{(f+g)}\} = \{-1 \leq n \leq 1, \text{ s.t. } \sqrt{-n^2} \leq 1\}$$

$$D_{f \circ g} = D_f \cap D_g = [-1, 1] \quad -1 \leq n \leq 1 \quad (5)$$

$$D_{(f+g)} = D_f \cap D_g = [0, 1]$$

$$D_{(L_9) \circ f} = [-1, 1]$$

الف) $f\left(\frac{r_n+1}{n-r}\right) = r_n + 2$

$$\frac{r_{n+1}}{n-r} = t$$

$$r_{n+1} = t_n - r_t$$

$$v_m - t_m = -1 - \gamma t$$

$$n = \frac{1 + vt}{t - v}$$

$$f'(a) = f\left(\frac{1+t}{t-w}\right) + 0 = \frac{f_+ 1t + 0t - 10}{t-w}$$

$$f(n) = \frac{14n - 11}{n - 14}$$

$$1) f\left(n + \frac{1}{3}\right) = 3^n + \frac{1}{3^n} \quad ? \text{ nicht } f(n)$$

$$\left(2 + \frac{1}{3}\right)^n = 2^n + \frac{1}{3} \cdot 2^{n-1} + \frac{1}{3} \cdot 2^{n-2} + \dots + \frac{1}{3^{n-1}}$$

$$\left(2 + \frac{1}{3}\right)^2 - 2\left(2 + \frac{1}{3}\right)\left(2 \times \frac{1}{3}\right)$$

$$f(n) = n^p - p_n$$

$f(n) = n\sqrt{n}$ ، امتداد طول نقطه‌ها به مقدار تابع y of n است
نقطه‌های n ها را در نقطه به طول ۱، ۲، ۳ ... قطع می‌کنند آنگاه $f(n) = n\sqrt{n}$ ، امتداد طول نقطه‌ها به مقدار تابع y of n است
 $n\sqrt{n} = 1 \rightarrow n = 1$

$$n\sqrt{n} = 1 \rightarrow n = 1$$

$$m\sqrt{x} = 1\sqrt{1} \rightarrow m = 1$$

$$Y-1 \leq 1$$