

ملک سنجری سری نم کلاس A

$$f(x) = \begin{cases} 6 + \frac{\pi x}{4} & x \leq 1 \\ \sqrt{x^2 + 1} & x > 1 \end{cases}$$

1. $f \circ f\left(\frac{2}{3}\right) = f\left(\frac{2}{3}\right) = 6 + \frac{2}{3} \times \frac{\pi}{4} = 6 + \frac{\pi}{6}$

$\sqrt{3} \rightarrow f(\sqrt{3}) = \sqrt{3+1} = \sqrt{4} = 2$
 2 شریک قبل

2. $f\left(\frac{1}{n}\right) = \sqrt{2n-1}$ $g(x) = 2 \cos^2 x \Rightarrow \frac{\pi}{3} = \frac{1}{2} \Rightarrow \frac{1}{4} \times 2 = \frac{1}{2}$

$\frac{1}{n} = t \Rightarrow 2n - \frac{1}{n} \Rightarrow 2t - t^2 = 2n - n$

ب) $f(x) = [x]$ $g(x) = \frac{x}{2x}$
 $g(\sqrt{2}) = \frac{\sqrt{2}+1}{\sqrt{2}+1} \times \frac{\sqrt{2}}{1\sqrt{2}} = \frac{\sqrt{2}+2}{1\sqrt{2}} = -2\sqrt{2}$ $f(-2-\sqrt{2}) = [-2-\sqrt{2}] = -4$

4. (با سوال صحیح و مستقیم)

ا) $f \circ g(x) \Rightarrow x=4 \rightarrow g=6 \Rightarrow f=5$

$x=2 \rightarrow g=4 \rightarrow f=5$

$x=8 \rightarrow g=10 \rightarrow f=12$

$x=6 \rightarrow g=8 \rightarrow f=12$

$\{(4,5)(2,5)(6,12)(8,12)\}$

ب) $g \circ f(x) = \emptyset$ ج) $f \circ f(x) = \emptyset$

د) $g \circ g(x) \Rightarrow x=4 \rightarrow 6 \rightarrow 8$

$x=2 \rightarrow 4 \rightarrow 6$

$x=6 \rightarrow 8 \rightarrow 10$

$\{(4,8)(6,10)(2,6)\}$

3. $f\left(\frac{\pi}{4}\right) = \sin 45 \cdot \frac{\sqrt{2}}{2}$ $f\left(\frac{\sqrt{2}}{2}\right) = \frac{\sqrt{2}}{2} \sqrt{1 - \left(\frac{1}{2}\right)} = \frac{\sqrt{2}}{2} \times \frac{1}{\sqrt{2}} = \frac{1}{2}$

5. $f_2\{(2,1)(3,2)(4,5)\}$ $g = \{(1,2)(3,1)(a,3)(b,1)\}$

$(4,2) \in f \circ g$ $(4,5) = (a,b) \in f(x)$ $(4,1) \in g \circ f$

$f(g(x)) = 2$ $g(f(x)) = 1$ $g(x) = 3$ $f(4) = 5$ $g(b) = 1$

$g(x) = 3 \Rightarrow a = 4$ $(4,5)$

$b = 5$

طریقہ سنجی سری نم کلاس A

$$t = 2n + 3$$

$$n = \frac{t-3}{2} \Rightarrow 3 \times \left(\frac{t-3}{2}\right) - 2 \Rightarrow \frac{3t-9}{2} - 2 \Rightarrow 3t-5$$

$$f(a+b) = a+b \rightarrow a(a+b) + b \Rightarrow a^2 + ba + b = 4(n+3)$$

$$f(-1) \Rightarrow ① -2n-1-3 = -1$$

$$\Rightarrow ② 2n-1+1 = -1$$

$$g(-1) = 3t-5 = -8$$

$$a = \pm 2 \Rightarrow b(a+1) = 3$$

$$b(3) = 3 \Rightarrow b = 1$$

$$b(-1) = 3 \Rightarrow b = -3$$

$$n^2 - 4n \Rightarrow n(n-4) \quad n \in D_{f(n)} \quad f(n) \in D_{g(n)}$$

$$f(n) \Rightarrow n + |n| \geq 0 \rightarrow n \geq -|n| \rightarrow D_{f(n)} = \mathbb{R}$$

$$D_{g(n)} = \mathbb{R} - \{0, 4\} = D_{g \circ f}$$

$$\sqrt{x} \Rightarrow x \geq 0 \text{ (I)} \quad 1-x^2 \geq 0 \rightarrow x^2 \leq 1 \rightarrow -1 \leq x \leq 1 \text{ (II)}$$

$$\text{①} \cap \text{②} = [0, 1] = D_{g \circ f}$$

$$x \in D_{f(n)} \quad f(n) \in D_{g(n)} \Rightarrow D_{f \circ g} = [0, 1]$$

$$\text{الف) } \frac{3n+1}{n-2} = t \Rightarrow n + -2t = 3n+1 \Rightarrow 3n-n+1 = -2t-1$$

$$\Rightarrow n(3-t) = -2t-1 \Rightarrow \frac{-2t-1}{3-t}$$

$$4 \times \frac{2t+1}{t-3} + 5 = \frac{8t+4}{t-3} + \frac{5t-15}{t-3} = \frac{13t-11}{t-3} \Rightarrow f(n) = \frac{13n-11}{n-3}$$

$$\hookrightarrow (n + \frac{1}{n})^3 = n^3 + 3(n + \frac{1}{n}) + \frac{1}{n^3} \quad n + \frac{1}{n} = t$$

$$= t^3 = t^3 + \frac{1}{t^3} + 3t \rightarrow t^3 - 3t = t^3 + \frac{1}{t^3}$$

$$g(1) = 0 \quad g(2\sqrt{2}) = 0$$

$$f(n) = n\sqrt{n} \Rightarrow n\sqrt{n} = 1 \rightarrow n = 1, n\sqrt{n} = 2\sqrt{2} \Rightarrow n = 2$$

$$\Rightarrow 2-1 = 1$$