

$$f \circ f\left(\frac{\sqrt{3}}{2}\right) \rightarrow \cos\left(\frac{\pi}{3}\right) \times \frac{\sqrt{3}}{2} = \cos\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}$$

$$f\left(\frac{\sqrt{2}}{2}\right) = \frac{\sqrt{2}+1}{2} = 2$$

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$$f \circ g\left(\frac{\pi}{3}\right) \rightarrow g\left(\frac{\pi}{3}\right) = 2 \times \frac{1}{\sqrt{3}} = \frac{2}{\sqrt{3}}$$

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

(الف)

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

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

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$$g \circ f\left(\frac{\pi}{4}\right) \Rightarrow f\left(\frac{\pi}{4}\right) = \sin\frac{\pi}{4} = \frac{\sqrt{2}}{2} \rightarrow g\left(\frac{\sqrt{2}}{2}\right) = \frac{\sqrt{2}}{2} \sqrt{1-\frac{1}{2}} = \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} = \frac{1}{2}$$

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$$f \circ g(a) = \{(5, 5), (5, 5), (4, 12), (1, 12)\}$$

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

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

$$g \circ g(a) = \{(4, 1), (2, 4), (2, 10)\}$$

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$$\left. \begin{array}{l} (5, 2) \in f \circ g \xrightarrow{f(a)=f} g(a)=2 \rightarrow a=5 \\ (5, 1) \in g \circ f \xrightarrow{f(a)=f} g(a)=1 \rightarrow b=5 \end{array} \right\} (a, b) = (5, 5)$$

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$$f \circ f(n) = f_n + 3$$

$$g(\underbrace{f_n + 3}_t) = 3n - 2 \Rightarrow f_n + 3 = t \rightarrow n = \frac{t-3}{3}$$

$$f \circ f(n) = f(-1) + 3 = -1$$

$$g(-1) \rightarrow f_n + 3 = -1 \rightarrow f_n = -4 \rightarrow n = -2$$

$$g(-1) = 3(-2) - 2 = -8$$

$$\frac{1}{(n+1) - f\sqrt{n+1}} \quad \left\{ \begin{array}{l} \text{مخرج برابر صفر} \\ \text{صفر} \end{array} \right. \quad n - n \neq 3\sqrt{n-n} \quad \xrightarrow{\text{مخرج صفر}} \Rightarrow n \neq 0$$

$$n+1 - f\sqrt{n+1} \neq 0$$

به ازای متغیر

$$\xrightarrow{\text{مثبت}} f_n \neq 3\sqrt{f_n} \rightarrow n \neq 3\sqrt{f_n} \rightarrow \sqrt{n}(\sqrt{n} - 3\sqrt{f}) \neq 0 \rightarrow n \neq 9 \rightarrow \text{Domain} = (0, +\infty) - \{9\}$$

$$(f+g) \circ f \rightarrow \sqrt{1-(1-\omega^2)} + \sqrt{1-\omega^2} = \pm \omega + \sqrt{1-\omega^2} \Rightarrow \frac{-1}{-1} + \frac{1}{1} =$$

$$P(f+g) \circ f = [-1, 1]$$

$$f\left(\frac{f_n+1}{n-2}\right) = f_n + d \rightarrow f_n + 1 = tn - rt \rightarrow n(1-t) = -rt - 1 \rightarrow n = \frac{rt+1}{t-1}$$

$$f(t) = \frac{1t + r + d - 1}{t-2} \rightarrow f(t) = \frac{rt-11}{t-2} \rightarrow f(n) = \frac{1f_n-11}{n-2} \rightarrow n+3$$

$$f\left(n + \frac{1}{n}\right) = \left(n^2 + \frac{1}{n^2}\right) \rightarrow t^2 = n^2 + \frac{1}{n^2} + f_n + \frac{3}{n} \rightarrow t^2 - f_n t = n^2 + \frac{1}{n^2} \rightarrow f(t) = t^2 - f_n t$$

$$f(n) = n^2 - f_n$$

$$g(n) = (n-1)(n-2\sqrt{2}) \quad \left\{ \begin{array}{l} \text{مخرج صفر} \\ \text{صفر} \end{array} \right. \quad g \circ f(n) = (n\sqrt{n} - 1)(n\sqrt{n} - 2\sqrt{2}) \rightarrow n = 1, 2 \rightarrow$$

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

$$|r-1| = 1$$