

$$f \circ f\left(\frac{\pi}{3}\right) = 2$$

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$$f\left(\frac{\pi}{3}\right) = \cot\left(\frac{\frac{\pi}{3}\pi}{\frac{\pi}{2}}\right) = \cot\left(\frac{\pi}{4}\right) = \frac{\cos 45^\circ}{\sin 45^\circ} = \frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}} = 1$$

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

$$g\left(\frac{\pi}{3}\right) = 2 \times \cos 45^\circ = 2 \times \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} = 1$$

۲- الف)

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

ب)

$$g(\sqrt{2}) = \frac{\sqrt{2}}{1 - \sqrt{2}} \quad f\left(\frac{\sqrt{2}}{1 - \sqrt{2}}\right) = \left[\frac{\sqrt{2}}{1 - \sqrt{2}}\right] \approx \left[\frac{1.4}{1 - 1.4}\right] \approx$$

$$[-3.5] = -4$$

گانتی

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

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$$\sqrt{\frac{1}{2} \times \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2}} = \sqrt{\frac{1}{4}} = \frac{1}{2}$$

$$f \circ g(x) = \{(4, 5), (2, 5), (4, 12), (1, 12)\}$$

۴- الف)

$$g \circ f(x) = \{\emptyset\} \text{ تابع تهی است.}$$

ب)

$$f \circ f(x) = \{\emptyset\} \text{ تابع تهی است.}$$

ج)

$$g \circ g(x) = \{(4, 1), (2, 6), (4, 1)\}$$

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$$(\varepsilon, 2) \in f \circ g$$

$$g(\varepsilon) = 1$$

$$f = \{(1, 2)\}$$

-a

$$\Rightarrow a = \varepsilon$$

$$a = \varepsilon$$

$$(\varepsilon, 1) \in g \circ f$$

$$f(\varepsilon) = a$$

$$g(a) = 1$$

$$b = a$$

a

$$(a, b) = (\varepsilon, a)$$

$$b = a$$

$$g(2x+3) = 3x-2$$

$$f(x) = ax + b$$

$$f(f(x)) = a(ax+b) + b = a^2x + ab + b = 2x+3 \Rightarrow a^2 = 2$$

$$a = \pm \sqrt{2}$$

$$a_1 = -2 \Rightarrow -2b + b = 3$$

$$-b = 3$$

$$b = -3$$

$$\Rightarrow f(x) = -2x - 3$$

$$2x+3 = -1$$

$$2 = -2x - 3$$

$$x = -\frac{5}{2}$$

$$x = -\frac{5}{2}$$

$$\Rightarrow 3x-2 = -\frac{15}{2}-2 = -\frac{19}{2}$$

می توانیم

به جوابی ۲-۲

قرار می دهیم

جواب فرقی ندارد.

Sybil Ali

Date

No

$$|x + |x|| = \varepsilon \sqrt{x + |x|}$$

$$|x| + x \geq 0$$

$$R - \{1\}$$

$$\frac{0}{0} \cdot \frac{1}{x}$$

$$\frac{1}{x^2 - \varepsilon x} \Rightarrow x^2 \neq \varepsilon x$$

$$x \neq 1 \quad |x| + x \neq \varepsilon \sqrt{x + |x|}$$

$$R - \{1\}$$

$$x^2 + x + \varepsilon x|x| \neq |x| + \varepsilon|x|$$

$$x^2 + \varepsilon x|x| \neq |x| + \varepsilon|x|$$

$$x^2 \neq \varepsilon x$$

$$x \neq 1$$

$$\{x \in D_f, f(x) \in D_g\}$$

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

$$D_f: 1 \geq x^2 \Rightarrow -1 \leq x \leq 1$$

$$g(x) = \sqrt{x} \quad D_g: x \geq 0$$

$$f \circ f_{\text{inv}} = -1 \leq \sqrt{1-x^2} \leq 1 \Rightarrow D_{f \circ f_{\text{inv}}} = [-1, 1] \text{ (1)}$$

$$g \circ f_{\text{inv}} = 0 \leq \sqrt{1-x^2} \Rightarrow D_{g \circ f_{\text{inv}}} = [0, 1] \text{ (2)}$$

$$(1) \cap (2) = [-1, 1]$$

$$f\left(\frac{x+1}{x-1}\right) = \varepsilon x + \varepsilon \quad \frac{x+1}{x-1} = t \Rightarrow x = \frac{t+1}{t-1} \Rightarrow \text{(3)}$$

$$\varepsilon x + \varepsilon = \frac{1+t+\varepsilon}{t-1} + \varepsilon = \frac{1+t-\varepsilon+\varepsilon}{t-1} = 1 + \frac{\varepsilon}{t-1} = \frac{1+\varepsilon-1}{x-1} = \frac{1+\varepsilon-1}{x-1}$$

$$f\left(x + \frac{1}{x}\right) = x + \frac{1}{x} \quad t = x + \frac{1}{x} \Rightarrow x + \frac{1}{x} = t \Rightarrow \text{(4)}$$

$$f(x) = x - \frac{1}{x}$$

$$g(1) = 0$$

$$g(\sqrt{x}) = 0$$

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

$$\rightarrow f(x) = 1 = x\sqrt{x} \Rightarrow x = 1$$

$$\rightarrow f(x) = \sqrt{x} = x\sqrt{x} \Rightarrow x = \frac{1}{4}$$

$$x_2 - x_1 = \frac{1}{4} - 1 = -\frac{3}{4}$$

(-1)