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نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره ۹... کلاس:
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 پاسخنامه تشریحی تکلیف شماره ۹... کلاس:

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

$$f(\sqrt{2}) = \sqrt{\sqrt{2}^2 + 1} = \sqrt{2 + 1} = \sqrt{3} \Rightarrow f \circ f\left(\frac{\sqrt{2}}{2}\right) = \sqrt{3} \checkmark$$

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

$$\Rightarrow \sqrt{2} = 1 \Rightarrow -(2+\sqrt{2}) = -2-\sqrt{2}$$

$$f(-(2+\sqrt{2})) = \underbrace{[-2-\sqrt{2}]}_{\approx -2.41} = -2.41 \checkmark$$

$$g\left(\frac{\pi}{4}\right) = 2 \cos \frac{\pi}{4} = 2 \left(\frac{1}{\sqrt{2}}\right) = \sqrt{2} \quad (الف)$$

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

$$\Rightarrow f \circ g\left(\frac{\pi}{4}\right) = \frac{\sqrt{3}}{2} \checkmark$$

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$$f\left(\frac{\pi}{4}\right) = \sin \frac{\pi}{4} = \frac{\sqrt{2}}{2}$$

$$g\left(\frac{\sqrt{2}}{2}\right) = \frac{\sqrt{2}}{2} \sqrt{1-\frac{1}{2}} = \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} = \frac{1}{2} \checkmark$$

$$g \circ f\left(\frac{\pi}{4}\right) = \frac{1}{2}$$

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$$f(x) \notin D_g \quad \{\emptyset\} \checkmark \quad (ب)$$

$$\{(4, \omega), (2, \omega), (4, 12), (8, 12)\} \quad (الف) \checkmark$$

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$$\{(1, 1), (2, 4), (4, 1)\} \checkmark \quad (ب)$$

$$R_f \cap D_f = \emptyset \quad \{\emptyset\} \checkmark \quad (ع)$$

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$$f(g(x)) \Rightarrow f(g(4)) = 2 \Rightarrow g(4) = 2 \Rightarrow a = 4 \checkmark$$

$$g(f(x)) \Rightarrow g(f(4)) = 1 \Rightarrow f(4) = 1 \Rightarrow b = \omega \checkmark \Rightarrow (a, b) = (4, \omega) \checkmark$$

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$$f(x) = ax + b \quad f(-1) = b - a$$

$$f \circ f(x) = a^2x + ab + b = \varepsilon x + \varepsilon$$

$$a^2 = \varepsilon \Rightarrow a = \begin{cases} +2 \Rightarrow b = 1 \\ -2 \Rightarrow b = -2 \end{cases} \Rightarrow \begin{matrix} \text{و لا بد} \\ b - a = -1 \end{matrix} \Rightarrow f(-1) = -1$$

$$g(-1) \xrightarrow{x^2+2=1} x=-2 \rightarrow f(-2) = -2 = -1 \Rightarrow g \circ f(-1) = -1 \checkmark$$

$$D_{g \circ f} \rightarrow x \in D_f \Rightarrow D_f = \mathbb{R} \Rightarrow x \in \mathbb{R} \text{ (I)}$$

$$f(x) \in D_g \Rightarrow \sqrt{x+|x|} \neq 0 \Rightarrow x \in \mathbb{R}^+ \text{ (II)}$$

$$\mathbb{R} - \{0\} \quad \sqrt{x+|x|} \neq \varepsilon \Rightarrow x \neq 1 \Rightarrow x \neq 1 \text{ (III)}$$

$$(I) \cap (II) \cap (III) = [0, +\infty) - \{1\} \checkmark$$

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

$$g(x) = \sqrt{x} \rightarrow x \geq 0 \checkmark$$

$$\Rightarrow x \geq 0 = D_{f+g} \checkmark$$

$$(A) \cap (B) = [-1, 1]$$

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

$$D_{(f+g)} = \mathbb{R} \Rightarrow x \in D_f \Rightarrow x \in [-1, 1] \checkmark (A) \quad \text{عوارضه} \quad 1-x^2 \geq 0 \Rightarrow -1 \leq x \leq 1$$

$$f(x) \in D_{f+g} \Rightarrow \sqrt{1-x^2} \in [0, 1] \Rightarrow 0 \leq 1-x^2 \leq 1 \quad (B)$$

$$x^2 + \frac{1}{x^2} = (x + \frac{1}{x})(x + \frac{1}{x} + 1) = A(A' + 1)$$

$$\frac{x^2 + 1}{x - 2} = A \Rightarrow x = \frac{2A + 1}{A - 2} \quad (\text{الف})$$

$$x + \frac{1}{x} = A' \quad A' = x^2 + \frac{1}{x^2} + 2$$

$$f(A) = \varepsilon \left(\frac{2A+1}{A-2} \right) + \omega = \frac{1A + \varepsilon + \omega A + \omega}{A-2}$$

$$\Rightarrow f(x) = x^2 - 2x \quad \text{دفعه}$$

$$f_1(A) = \frac{12A - 11}{A - 2} \Rightarrow f(x) = \frac{12x - 11}{x - 2} \checkmark$$

$$g(f(x)) \leq 0 \Rightarrow f(x) \begin{cases} \rightarrow 1 \Rightarrow x\sqrt{x} \leq 1 \rightarrow x \leq 1 \checkmark \\ \rightarrow \sqrt{2} \Rightarrow \sqrt{2}\sqrt{x} = x\sqrt{x} \rightarrow x \leq 2 \checkmark \end{cases}$$

$$\rightarrow 2-1 \leq 1 \checkmark$$

$$\text{اختلاف ریشه های } g \circ f(x)$$