فرانک آقایی ۱۸٫۷۵ تکلیف شماره ی ۹ | یازدهم دختر

1. $\cot \frac{\frac{2}{3}\pi}{4} \to \cot \frac{1}{6}\pi = \sqrt{3} \to \sqrt{x^2+1} = \sqrt{3+1} \to \sqrt{4} = 2$ ۲

2. الف) $g(\frac{\pi}{3}) = 2\cos^2\underbrace{\frac{\pi}{3}}_{\frac{1}{4}} = \frac{1}{2} \longrightarrow f(\frac{1}{2}) = f(2) = \sqrt{\frac{4-1}{4}} = \frac{\sqrt{3}}{2}$ ۲

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

-4 ✓

3. $f(\frac{\pi}{4}) \to \sin\frac{\pi}{4} = \frac{\sqrt{2}}{2}$ $\cancel{\frac{\sqrt{2}}{2}}\sqrt{1-(\frac{\sqrt{2}}{2})^2}$ $\cancel{\frac{\sqrt{2}}{2}}\sqrt{1-(\cancel{\frac{2}{4}})}$ $= \sqrt{\frac{1}{2}} \times \frac{\sqrt{2}}{2} = \frac{1}{2}$ ۲

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

4. الف) $g(x) = 6, 4, 8, 10 \to \cancel{f}og(x) \to \{(2, 5), (4, 5), (8, 12), (6, 12)\}$

ب) $f(x) = 5, 5, 12, 12 \to gof(x) \to \emptyset$ ۲

ج) $f(x) = 5, 5, 12, 12 \to fof(x) \to \emptyset$

د) $g(x) = 6, 4, 8, 10 \to gog(x) \to \{(2, 6), (4, 8), (6, 10)\}$

5. $fog \longrightarrow (4, 2) \underset{g\text{ جایگذاری}}{\longrightarrow} \underset{x}{4} \to fog\, x \to 2 \to fog\ (3, 2)$

$g(x) = (a, 3)$ ۲
4

$a = 4$
$b = 5 \to (4, 5)$

اینو ندارد $f(x)$ f

$gof(x) = 1 \to g(x) = (5, 1)\ (3, 1) \to f(x) = (4, 5)$

-6

$f(-1) \rightarrow -4+3=-1 \rightarrow f(\underbrace{f(-1)}_{-1})=-1$

(۲)

$gof(-1) \longrightarrow g(2x+3) \rightarrow$ [illegible]

$2x+3=-1 \rightarrow 2x=-4 \rightarrow x=-2 \rightarrow$

$y=-6-2=\boxed{-8}$

-7

$\dfrac{1}{(\sqrt{x+|x|})(\sqrt{x+|x|}-4)} \longrightarrow$

x	0		8	
		$-$		$+$

$\longrightarrow (0,+\infty)-\{8\}$

(۲)

-8

$\sqrt{x}+\sqrt{1-x^2} \longrightarrow \sqrt{x^2}+\sqrt{1-\sqrt{1-x^2}} \longrightarrow$

-1		1	
$-$	$+$		$-$

$[-1,1]$

$D_f=-1\leqslant x\leqslant 1 \cap D_g= x\geqslant 0 \rightarrow [0,1]$

$0\leqslant\sqrt{1-x^2}\leqslant 1 \rightarrow x^2\geqslant 0$ ✓

$D_{(f+g)of}=[-1,1]$

(۱٫۲۵)

-9 الف)

$\dfrac{3x+1}{x-2}=t \rightarrow tx-2t=3x+1 \rightarrow -2t=\underbrace{3x-tx}_{x(3-t)}+1 \longrightarrow$

$-2t-1=x(3-t) \rightarrow x=\dfrac{-2t-1}{3-t}$ $\left(\dfrac{2t+1}{t-3}\right)$ $\rightarrow f(t)=4\underbrace{\left(\dfrac{-2t-1}{3-t}\right)}_{\frac{-8t-4}{3-t}}+5$

$\dfrac{-8t-4+15-5t}{3-t}=\dfrac{-13t+11}{3-t}=f(t)$

$\dfrac{13x-11}{x-3}$

(۱٫۵)

ب) $x+\dfrac{1}{x}=t \rightarrow t^3\underbrace{-3x-\dfrac{3}{x}}_{-3(t)} \rightarrow f(t)=t^3-3t$ ✓

$x^3+\dfrac{1}{x^3}+3x+\dfrac{3}{x}$

$g(1) = ۰$ $\qquad g(f(a)) \longrightarrow f(a) = x\sqrt{a} = 1 \rightarrow a = 1$ $\quad -10$

$g(۲\sqrt{۲}) = ۰$ $\qquad g(f(a)) \longrightarrow f(x) = x\sqrt{x} \longrightarrow ۲\sqrt{۲} \longrightarrow a = ۲$

$۲ - ۱ = ۱$

۲