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

۱۲

۱) $f(f(\frac{\pi}{3}))$

$f(\frac{\pi}{3}) = \cot\frac{\pi}{4} = \sqrt{3}$

$f(\sqrt{3}) = \sqrt{(\sqrt{3})^2+1} = 2$ (ج)

۲) الف) $f(g(\frac{\pi}{3}))$

$2\cos^2(\frac{\pi}{3}) = \frac{1}{2}$

$n=2 \longrightarrow f(\frac{1}{2}) = \sqrt{\frac{2-1}{4}} = \sqrt{\frac{3}{4}} = \frac{\sqrt{3}}{2}$ (ج)

ب) $g(\sqrt{2}) \Rightarrow \frac{\sqrt{2}}{1-\sqrt{2}} \times \frac{1+\sqrt{2}}{1+\sqrt{2}} = \frac{\sqrt{2}+2}{-1} = -2-\sqrt{2} \simeq -3.4 \rightarrow f(x) \Rightarrow$

$f(x) \Rightarrow [-2-\sqrt{2}] = -4$

۳) $f(\frac{\pi}{4}) \rightarrow \sin\frac{\pi}{4} = \frac{\sqrt{2}}{2}$

$g(\frac{\sqrt{2}}{2}) = \sqrt{1-\frac{1}{2}} = \sqrt{\frac{1}{2}} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} = \frac{1}{2}$ (ج)

۴) الف) $f \circ g = \{(4,5),(2,3),(6,12),(8,12)\}$

$4 \rightarrow 8 \rightarrow 12$, $2 \rightarrow 4 \rightarrow 5$, $6 \rightarrow 8 \rightarrow 12$, $8 \rightarrow 10 \rightarrow 12$

ب) $g \circ f = \varnothing$ (ج)

$4 \rightarrow 5 \rightarrow x$, $2 \rightarrow 4 \rightarrow x$, $8 \rightarrow 12 \rightarrow x$, $10 \rightarrow 12 \rightarrow x$

ج) $f \circ f = \varnothing$

$4 \rightarrow 5 \rightarrow x$, $2 \rightarrow 4 \rightarrow x$, $8 \rightarrow 12 \rightarrow x$, $10 \rightarrow 12 \rightarrow x$

د) $g \circ g = \{(4,8),(2,9),(4,10)\}$

$4 \rightarrow 8 \rightarrow 8$, $2 \rightarrow 4 \rightarrow 9$, $4 \rightarrow 8 \rightarrow 10$

۵) $f \circ g = \{(1,1),(3,7),(b,7),(a,2)\}$ (ج)

$1 \rightarrow 2 \rightarrow 1$, $3 \rightarrow 1 \rightarrow 7$, $a \rightarrow 3 \rightarrow 2$, $b \rightarrow 1 \rightarrow 7$

$g \circ f = \{(2,3),(4,2)\} \rightarrow$

$(4,2) \rightarrow a=4$

$(2,2) \rightarrow b=5$

$(a,b) \rightarrow (4,5)$

$2 \rightarrow 1 \rightarrow 2$, $3 \rightarrow 2 \rightarrow x$, $4 \rightarrow 5 \rightarrow 2$

$1 \rightarrow 7 \rightarrow x$

$g(f(x)) \rightarrow \dfrac{1}{x+|x|-\sqrt{x+|x|}} \rightarrow (|x|+x) \neq (\sqrt{x+|x|})^2$

$\dfrac{2x^2+x}{x^2} \neq \dfrac{15}{3}(x+|x|) \rightarrow x \neq 4x \rightarrow x \neq 0$

$x \neq 1$

$D_f = \mathbb{R} - \{0, 1\}$