نام و نام خانوادگی ... پاسخنامه تشریحی تکلیف شماره ۷ کلاس ...

۱	$\sqrt{xf(x)} \geq 0 \to \begin{cases} x \geq 0 , f(x) \geq 0 \quad [2,5] \\ x \leq 0 , f(x) \leq 0 \quad [-5,0] \end{cases} \Rightarrow D = [-5,0] \cup [2,5]$
۲	$\sqrt{\frac{-x}{f(x)}} \geq 0 \to \begin{cases} f(x) \neq 0 , x \geq 0 , f(x) > 0 \quad (0,2) \\ f(x) \neq 0 , x \geq 0 , f(x) \leq 0 \quad (-3,0) \end{cases} \Rightarrow D = (-3,2) - \{0\}$
۳	if $\xrightarrow{x=2} f(2) - 2f(2) = 4 - 6 + 4$ $-f(2) = 2$ if $\xrightarrow{x=-2} f(-2) - 2f(2) = 4 + 6 + 4$ $f(-2) = 10$
۴	$f(f(5)) + f(f(1)) = 9$ $f(1)$: $x \leq 3 \to 2+3=5$; $x > 3 \to 5 - \sqrt{5+4} = 2$ $f(5)$: $x > 3 \to 5 - \sqrt{5+4} = 2$; $x \leq 3 \to 4+3 = 7$
۵	if $\xrightarrow{x=1} \begin{cases} f(x) = a - b + 3 \\ f(x-1) = 2 \end{cases} \Rightarrow f(x-1) - f(x) = 6x + 3$ $2 - a + b - 3 = 6 + 3$ $b - a = 8$ $a - b = -8$

۶

$$f(\sqrt{3}-2) = \frac{(\sqrt{3}-2)^2 + 4(\sqrt{3}-2) + 5}{(\sqrt{3}-2)^2 + 4(\sqrt{3}-2) + 7} = \frac{\overbrace{(\sqrt{3}+2)(\sqrt{3}-2)}^{3-4} + 5}{\underbrace{(\sqrt{3}+2)(\sqrt{3}-2)}_{3-4} + 7}$$

$$\boxed{\frac{2}{3}}$$

۷

$$f\left(x-\frac{1}{x}\right) = \frac{x^4+1}{x^2} = x^2 + \frac{1}{x^2} = \left(x-\frac{1}{x}\right)^2 + 2$$

$$f(x) = x^2 + 2 \Rightarrow \boxed{f(-3) = 11}$$

۸

$\sqrt{9-x^2} \geq 0 \longrightarrow -3 \leq x \leq 3$ $\quad D_g = [-3,3]$

الف) $\frac{f}{g} = \{(1, -\frac{1}{\sqrt{8}}), (0, \frac{2}{3}), (2, \frac{0}{\sqrt{5}})\}$

ب) $\frac{g}{f} = \{(1, -\sqrt{8}), (0, \frac{3}{2})\}$ ~~$(2, \frac{\sqrt{5}}{0})$~~

۹

الف) $2f(x) = \{(3,2), (4,8), (-5,4), (1,-4)\}$

ب) $f(x)+1 = \{(3,2), (4,5), (-5,3), (1,-1)\}$

ج) $3f^2(x)+1 = \{(3,4), (4,49), (-5,13), (1,13)\}$

د) $f(2x) = \{(4,1), (\frac{4}{2},4), (\frac{-5}{2},2), (\frac{1}{2},-2)\}$

۱۰

الف) $f-g = \{(1,4), (2,2), (3,3)\}$

ب) $\frac{2f}{g} = \{(2,6), (3,-2)\}$ ~~$(1, \frac{8}{0})$~~