نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ...۷... کلاس ...دهم...تجربی...۳...

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$x\ f(x) \geq 0 \qquad f x = 0$

$\downarrow$

$-5, 2, 5$

	-4	-5	0	2	5
	$-$	$+$	$-$	$+$	

$\Rightarrow x \in [-5, 0] \cup [2, 5]$

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$\frac{-x}{f(x)} \geq 0 \quad , \quad f(x) \neq 0 \quad \Leftrightarrow \frac{x}{f(x)} \leq 0$

	-4	-2	0^*	2	5
x	$-$	$-$	$+$	$+$	$+$
$f(x)$	$+$	$-$	$+$	$-$	$+$

$\downarrow$

$x \in (-2, 2) - \{0\}$

$\Rightarrow$ تعداد صحیح $= 3$

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$f(-2) - 2(-2) = (-2)^2 + 4 + 4$

$f(-2) + 4 = 16$

$f(-2) = 12$

$f(2) - 2f(2) = 4 - 4 + 4 = 4$

$-f(2) = 4$

$f(2) = -4$

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$f(f(0)) + f(f(1)) = f(2) + f(5)$

$f(0) = 5 - \sqrt{5+4} = 5 - 3 = 2$

$f(1) = 2 + 3 = 5$

$f(1) = 7$

$7 + 2 = 9$

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$f(x-1) - f(x) = 4x + 2$

$f(x) = ax^2 - bx + 2$

$f(x-1) = a(x-1)^2 - b(x-1) + 2$

$\vdots$

$a(x^2 - 2x + 1) - bx + b + 2$

$f(x-1) \to ax^2 - 2ax + a - bx + b + 2 - ax^2 + bx - 2 = 4x + 2$

$-2ax + a + b = 4x + 2 \Rightarrow -2ax + (a+b) = 4x + 2$

$\begin{cases} -2a = 4 \Rightarrow a = -2 \\ -2 + b = 2 \Rightarrow b = 4 \end{cases}$

$\Rightarrow a - b = -6$

$f(x) = \frac{2x^2 + 8x + 7}{x^2 + 4x + 1}$

$\Leftrightarrow$

$f(\sqrt{2}-2) = \frac{2(\sqrt{2}-2)^2 + 8(\sqrt{2}-2) + 7}{(\sqrt{2}-2)^2 + 4(\sqrt{2}-2) + 1} = \frac{2(6-4\sqrt{2}) + 8\sqrt{2} - 16 + 7}{6 - 4\sqrt{2} + 4\sqrt{2} - 8 + 1} = \frac{3}{4}$ ✓

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

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

$f(-2) = (-2)^2 + 2 = 11$

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(أ) $\frac{f}{g} = \{(2, \frac{5}{10}), (1, \frac{-3}{\sqrt{8}}), (0, \frac{2}{3})\}$

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

$g(x) = \sqrt{9 - x^2}$

$\Rightarrow 9 - x^2 \geq 0 \Rightarrow x^2 \leq 9$

$\Rightarrow x \leq 3 \; , \; x \geq -3$

$[-3, 3]$ على $f(x) = 2, 1, 0$

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

(ب) $f + 1 = \{(1, 3), (3, 9), (-2, 6), (4, -2)\}$

(ج) $f^2(x) + 1 = \{(2, 5), (3, 10), (-2, 5), (4, 17)\}$

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

$x = 1 \Rightarrow 2x = 2$ $\quad$ $x = 2 \Rightarrow 2x = 4$ $\quad$ $x = -2 \Rightarrow 2x = -4$ $\quad$ $x = \frac{4}{3} \Rightarrow 2x = \frac{8}{3}$ $\quad$ $x = \frac{4}{-2} \Rightarrow 2x = -2$ $\quad$ $x = 1 \Rightarrow 2x = 2$ $\quad$ $x = \frac{1}{2} \Rightarrow 2x = 1$

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$f(x) \cup g(x) = \{1, 2, 3\}$

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(أ) $f - g = \{(1, 0-4), (2, 3-1), (3, 1-(-1)\} = \{(1, 4), (2, 2), (3, 2)\}$

(ب) $\frac{2f}{g} = \{(1, \frac{2}{-1}), (2, \frac{4}{1}), (3, \frac{2}{-1})\} = \{(2, 4), (3, -2)\}$