نام و نام خانوادگی پریا ریمانژاد(ه) .... **پاسخنامه تشریحی تکلیف شماره ...... کلاس** پایه دهم ....

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الف) $\frac{x-1}{x} - \frac{x}{x-1} \geq 0 \qquad x \neq 0 \qquad x \neq 1$

$\frac{x-1}{x} \geq \frac{x}{x-1} \qquad D = (-\infty , -1]$

$\frac{-2x+1}{x(x-1)} \geq 0$

	0		$\frac{1}{2}$		1	
$+$	ت ن	$-$	0	$+$	ت ن	$-$

ج) $x+1 \neq 0 \quad x \neq -1 \qquad \frac{3}{x-1} + \frac{1}{x+2} \neq 0 \qquad \frac{3x+6+x-1}{(x-1)(x+2)} \neq 0$

$x \neq 0$

$x-1 \neq 0 \quad x \neq 1 \qquad \frac{4x+5}{(x-1)(x+2)} \neq 0 \quad 4x \neq -5 \quad x \neq \frac{-5}{4}$

$x+2 \neq 0 \quad x \neq -2 \qquad D = \mathbb{R} - \{-2, -1, \frac{-5}{4}, 1, 0\}$

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الف) $(3^{-x} - 9)(32 - 2^{2x}) \geq 0 \qquad x = -2 \qquad x = \frac{5}{2}$

$D_f = (-\infty, -2] \cup [2.5, +\infty)$

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$x - 1 \geq 0 \rightarrow x \geq 1$

$3 - \sqrt[4]{x-1} = \sqrt{y+1} \rightarrow x \leq 82 \quad D_f = [1, 82]$

ج) $x - 1 \geq 0 \quad x \geq 1$

$y + 1 \geq 0 \quad y \geq -1$

$\sqrt[4]{x-1} + \sqrt{y+1} = 3$

$D = \{(x, y) \mid x \geq 1, y \geq -1, \sqrt[4]{x-1} + \sqrt{y+1} = 3\}$

۳

$x^2 - x - 2 > 0 \longrightarrow (x-2)(x+1) > 0 \longrightarrow x > 2 \quad x < -1$

$\sqrt{x^2 - 1} + 1 > 0 \longrightarrow x^2 - 1 > -1 \longrightarrow x^2 > 0 \quad |x| > 0 \quad x \neq 0$

$D = (-\infty, -1) \cup (2, +\infty)$

۴

$\sqrt{x^2 + ax + 3} = -(x^2 - ax - 3) \longrightarrow x^2 - ax - 3 = 0$

$x = -2 \quad x = b$

$-2 \times b = -3 \qquad b = \frac{3}{2}$

$-2 + b = a$

$-\frac{2}{1} + \frac{3}{2} = a \qquad a = \frac{-1}{2}$

$a + b = \frac{-1}{2} + \frac{3}{2} = \boxed{1}$

۵

$f(x) - x \geq 0$

(۱) $(3x - 2) - x \geq 0 \quad 2x - 2 \geq 0 \quad 2(x-1) \geq 0 \quad x \geq 1$

(۲) $(2x + 3) - x \geq 0 \quad x + 3 \geq 0 \quad x \geq -3 \ , \ x < 1 \longrightarrow [-3, 1)$

$D = [1, +\infty) \cup [-3, 1) \longrightarrow [-3, +\infty)$

۶

$2f(5) = 14a + 14$

$f(-2) - a = 3a - 4 - a$

$14a + 14 = 3a - 4 - a$

$10a = -18 \qquad \boxed{a = -\frac{9}{5}}$

۷

$\sqrt{2+\sqrt{3}} + \frac{1}{\sqrt{2+\sqrt{3}}} + 2 + \sqrt{2-\sqrt{3}} + \frac{1}{\sqrt{2-\sqrt{3}}} + 2 \longrightarrow$

$\left(\sqrt{2+\sqrt{3}} + \sqrt{2-\sqrt{3}}\right) + \left(\sqrt{2+\sqrt{3}} + \sqrt{2-\sqrt{3}}\right) + 4 \longrightarrow 2\left(\underbrace{\sqrt{2+\sqrt{3}} + \sqrt{2-\sqrt{3}}}_{\sqrt{6}}\right) + 4$

$f(2-\sqrt{3}) + f(2+\sqrt{3}) = \boxed{2\sqrt{6} + 4}$

۸

$\times 2 \quad 2f(x) - 3f(-x) = 4x^2 - x$

$\times 3 \quad 2f(-x) - 3f(x) = 4x^2 + x$

$4f(x) - 6f(-x) = 8x^2 - 2x$

$6f(-x) - 9f(x) = 12x^2 + 3x \longrightarrow -5f(x) = 20x^2 + x$

$\boxed{f(x) = -4x^2 - \frac{x}{5}}$

۹

$x = 0 \longrightarrow 2f(0) = 3m - 1 \longrightarrow \boxed{f(0) = \frac{3m-1}{2}}$

$x = -2 \longrightarrow f(0) = \frac{15+5m}{4} \qquad \frac{15+5m}{4} = \frac{3m-1}{2} \longrightarrow m = \frac{9}{2}$

$f(0) = \frac{25}{4}$

۱۰

$f(x) + f\left(\frac{1}{x}\right) = ax + b + \frac{a}{x} + b \longrightarrow a\left(x + \frac{1}{x}\right) + 2b \longrightarrow \frac{a(x^2+1) + 2bx}{x}$

$\frac{ax^2 + 2bx + a}{x} = \frac{3x^2 - 12x + 3}{x} \qquad a = 3 \qquad b = -6$

$f(-1) = 3(-1) - 6 \longrightarrow \boxed{f(-1) = -9}$