

نام و نام خانوادگی: ... (محل امضاء) ... پاسخنانه تشریحی تکلیف شماره ... کلاس ...

$$f(x) - x + 1 \geq 0 \quad [x] \geq 4 \Rightarrow x \geq 4 \Rightarrow 2x - 1 - x + 1 = x \rightarrow x \geq 4 \quad (1)$$

$$[x] \leq 4 \Rightarrow x \leq 4 \Rightarrow 4x + 3 - x + 1 = 3x + 4 \quad 3x + 4 \geq 0 \Rightarrow x \geq -\frac{4}{3} \quad (2)$$

$$(1) \cap (2) \Rightarrow D_f = \left[-\frac{4}{3}, +\infty\right)$$

$$\Rightarrow \frac{3(12x^3 + 12x^2 + 4x + 1)}{(2x+1)^4} = \frac{3(2x+1)^3}{(2x+1)^4} = \frac{3}{2x+1}$$

$$2x+1 \neq 0 \Rightarrow x = -\frac{1}{2} \quad D = \mathbb{R} - \left\{-\frac{1}{2}\right\}$$

$$x=0 \Rightarrow c = \frac{-2}{1} = -2$$

$$x=1 \Rightarrow 3 = \frac{a+2}{b+1} \Rightarrow a = 3b+1$$

$$x=-1 \Rightarrow 1 = \frac{2-a}{b-1} \Rightarrow b-1 = (3b+1) \times (-1) + 2 \Rightarrow 4b = 2 \Rightarrow b = \frac{1}{2}, a = \frac{3}{2}$$

$$b+c = \frac{1}{2} + (-2) = \boxed{-\frac{3}{2}}$$

$$g(x) = \frac{(x-1)(x+1)}{(x-1)(x-2)} \xrightarrow{\text{یک ریشه مشترک}} c=1 \Rightarrow x^2 - 2x + 1 \Rightarrow a = -2, b = 1$$

$$a+b+c = -2+1+1 = \boxed{0}$$

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

$$\Rightarrow x(x^2 - 4x + 4) + (-x)(x^2 + 4x + 4) = x(-12x) = \boxed{-12x^2}$$

$x = 1 - \sqrt{x} \Rightarrow x = -1 \Rightarrow f(x) = -1 + \sqrt{x} = 1$ $-1 = 1 - \sqrt{x} \Rightarrow x = 1 \Rightarrow f(-1) = \sqrt{x} = \sqrt{1} = 1$ $f(x) + f(-1) = 1 + 1 = \underline{2}$	6
$x + \sqrt{x} = 4 \Rightarrow (\sqrt{x} + 1)(\sqrt{x} - 1) = 0 \Rightarrow \sqrt{x} = 1, x = 1$ $1 + \sqrt{1} = \underline{2}$	7
$f(x) = x^2 + x, f(-x) = -x^2 - x = -f(x)$ $f(1-x) = f(-(x-1)) = -f(x-1)$ $f(x-1) + (-f(x-1)) = \underline{0}$	8
$Df \Rightarrow x - \frac{a}{x} \geq 0 \Rightarrow x \geq \frac{a}{x} \quad Dg \Rightarrow b - x \geq 0 \Rightarrow x \leq \frac{b}{x}$ $Df \cap Dg = \{1\} \Rightarrow \frac{a}{x} = 1 = \frac{b}{x} \Rightarrow a = \frac{a}{1}, b = 1$ $(f-g)(1) = K \Rightarrow 1(K-1) - 1K = K \Rightarrow 1K = -1 \Rightarrow K = -1$ $a - \frac{b}{x} - K = 1 - 1 + 1 = \underline{1}$	9
$Dg \Rightarrow x + 1 \geq 0 \Rightarrow x \geq -1 \quad Df \Rightarrow m - x \geq 0 \Rightarrow x \leq m$ $Df \cap Dg \Rightarrow [-1, m] = [-1, 1] \Rightarrow m = 1$ $f(x) - \sqrt{x} = 4\sqrt{x} \Rightarrow \sqrt{x} + n = 4\sqrt{x} \Rightarrow n = 4\sqrt{x} - \sqrt{x}$ $m + n = 1 + 4\sqrt{x} - \sqrt{x} = \underline{1 + 3\sqrt{x}}$	10