

نام و نام خانوادگی: زهرا سراج پاسخنامه تشریحی تکلیف شماره 4... کلاس: یازدهم دیف

$$f(x) = \begin{cases} (a+1)(x+2) & ; x > 1 \\ 3a+2x & ; x \leq 1 \end{cases} \rightarrow f(5) = (a+1)(5+2) = (a+1)7 = 7a+7$$

$$f(5) = 14a+14 \rightarrow 7a+7 = 14a+14 \rightarrow -7a = 7 \rightarrow a = -1$$

1

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

$$14a+14 = 3a+2(-2) + a \rightarrow 14a+14 = -4-1 \rightarrow 14a = -15 \rightarrow a = -1.1$$

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

$$AB = (\sqrt{2-\sqrt{3}})(\sqrt{2+\sqrt{3}}) = 1$$

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

$$(A+B)^2 = A^2 + B^2 + 2AB = 4$$

$$AB = \sqrt{4} = 2$$

2

$$f(2-\sqrt{3}) + f(2+\sqrt{3}) = 2\sqrt{2-\sqrt{3}} + \frac{1}{\sqrt{2-\sqrt{3}}} + \sqrt{2+\sqrt{3}} + \frac{1}{\sqrt{2+\sqrt{3}}} + 2 = 2(\sqrt{2-\sqrt{3}} + \sqrt{2+\sqrt{3}}) + 4$$

$$= 2(\sqrt{4}) + 4 = 2(2) + 4 = 8$$

جواب آف

$$2f(x) - 3f(-x) = 4x^2 - x$$

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

$$\begin{cases} 4f(x) - 3f(-x) = 4x^2 - x \\ 4f(-x) - 3f(x) = 4x^2 + x \end{cases} \rightarrow$$

$$-5f(x) = 20x^2 + x$$

$$f(x) = \frac{20x^2 + x}{-5} = -4x^2 - \frac{x}{5}$$

3

$$(x+2)f(x) - 3xf(x+2) = 4x^2 - mx + 3m - 1$$

$$\begin{aligned} f(0) &\rightarrow 2f(0) = 3m - 1 \rightarrow f(0) = \frac{3m-1}{2} \\ f(-2) &\rightarrow 4f(0) = 14 + 2m + 3m - 1 \rightarrow 4f(0) = 13 + 5m \\ f(0) &= \frac{13+5m}{4} \end{aligned}$$

$$\frac{3m-1}{2} = \frac{13+5m}{4} \rightarrow 2(3m-1) = 13+5m \rightarrow 6m-2 = 13+5m \rightarrow m = 15$$

$$f(0) = \frac{3(15)-1}{2} = \frac{44}{2} = 22$$

4

$$f(x) + f\left(\frac{1}{x}\right) = \frac{3x^2 - 12x + 3}{x}$$

$$f(x) + f\left(\frac{1}{x}\right) = ax + b + \frac{a}{x} + b \rightarrow a\left(x + \frac{1}{x}\right) + 2b = \frac{3x^2 - 12x + 3}{x}$$

$$f(x) = ax + b$$

$$f\left(\frac{1}{x}\right) = \frac{a}{x} + b$$

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

$$a = 3$$

$$b = -9$$

$$f(x) = 3x - 9 \rightarrow f(-1) = -12$$

5

$\begin{cases} f(x) = (x-1)\sqrt{1-x} \xrightarrow{\lambda \geq 0} 1-\lambda \geq 0 \rightarrow 1 \geq \lambda \\ g(x) = -\sqrt{(1-x)^3} \xrightarrow{\lambda \geq 0} (1-\lambda)^{3/2} \geq 0 \rightarrow 1-\lambda \geq 0 \rightarrow 1 \geq \lambda \end{cases}$ تابع‌های هستند. $D_f = D_g$	۶
$\begin{cases} f(x) = x\sqrt{x} \xrightarrow{\lambda \geq 0} \lambda \geq 0 \rightarrow (0, \sqrt{10}) \\ g(x) = \sqrt{x^3} \xrightarrow{\lambda \geq 0} \lambda^3 \geq 0 \rightarrow \lambda \geq 0 \rightarrow \lambda \geq 0 \rightarrow \sqrt{10^3} \rightarrow (0, \sqrt{10}) \end{cases}$ $D_f = D_g$	۷
$\begin{cases} f(x) = [\sqrt{x} - [\sqrt{x}]] \xrightarrow{\lambda \geq 0} \lambda \geq 0 \rightarrow [\sqrt{2} - [\sqrt{2}]] = 0 \\ g(x) = \sqrt{x - x } \xrightarrow{\lambda \geq 0} \lambda - \lambda \geq 0 \rightarrow \lambda \geq 0 \rightarrow \lambda = 2 \rightarrow \sqrt{2 - 2 } = 0 \end{cases}$ $D_f = D_g$ در تابع مساوی هستند.	۸
$f = \{(1, 2), (2, 3), (3, 1), (0, 0)\} \quad g = \{(-1, 1), (1, 1), (2, 3), (3, 5), (0, 2), (\sqrt{7}, 1)\}$ الف) $\left(\frac{f+g}{f-g}\right)(1) \quad \frac{f(1)+g(1)}{f(1)-g(1)} = \frac{2+1}{2-1} = 3$ ب) $\left(\frac{f+g}{f-g}\right)(2) \quad \frac{f(2)+g(2)}{f(2)-g(2)} = \frac{3+3}{3-3} = \frac{6}{0}$ تعریف نشده ج) $f(0)g(-1) \quad \frac{f(0)}{g(-1)} = \frac{0}{1} = 0$	۹
$f(x) = \{(2, 1), (-1, 4), (0, 5), (-2, 2), (3, -1)\}$ الف) $g(x) = f(3x-1)$ ب) $h(x) = f(x)$ الف) $h(2) = f(2) = 1$ $h(-2) = f(2) = 1$ $h(0) = f(0) = 5$ ب) $h(3) = f(3) = -1$ $h(-3) = f(3) = -1$	۱۰