

نام و نام خانوادگی علی جمشیدی پاسخنامه تشریحی تکلیف شماره ۶ کلاس بیستم

$$2f(5) = f(-2) + a \text{ و } f(x) = \begin{cases} (a+1)(x+2) & ; x > 1 \\ 3a+2x & ; x \leq 1 \end{cases} \quad a=? \quad \begin{cases} f(5) = 2 \times (a+1) \times (5) = 10a+10 \\ f(-2) + a = 3a-6+a = 4a-6 \end{cases} \Rightarrow 10a+10 = 4a-6$$

$$\downarrow$$

$$10a = -16$$

$$a = -\frac{16}{10} = -1,6$$

۱

$$f(x) = \sqrt{x} + \frac{1}{\sqrt{x}} + 2 \Rightarrow f(2-\sqrt{3}) + f(2+\sqrt{3}) = ? \quad f(x) = \left(\sqrt{x} + \frac{1}{\sqrt{x}}\right)^2$$

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

$$\text{و } f(2+\sqrt{3}) = \left(\sqrt{2+\sqrt{3}} + \frac{1}{\sqrt{2+\sqrt{3}}}\right)^2 = \frac{1}{\sqrt{2+\sqrt{3}}} + 1$$

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

۲

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

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

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

$$\Rightarrow -f(x) = 2x^2 + x$$

$$\Downarrow$$

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

۳

$$2f(0) = 3m-1 \Rightarrow f(0) = \frac{3m-1}{2}$$

$$0 + 2f(0) = 19 + 2m + 3m-1 \Rightarrow f(0) = 5m+10$$

$$3(3m-1) = 0m+10 \Rightarrow 9m-3 = 0m+10 \Rightarrow m = \frac{9}{9} \Rightarrow f(0) = \frac{3 \times 9}{2} - 1 = \frac{20}{2}$$

۴

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

$$2f(-1) = \frac{3+12+3}{-1} = -18 \Rightarrow f(-1) = -9$$

۵

$f(x); 1-x \geq 0 \rightarrow x \leq 1 \rightarrow D_f = (-\infty, 1]$ $g(x); (1-x)^2 \geq 0 \Rightarrow 1-x \geq 0 \rightarrow x \leq 1 \Rightarrow D_g = (-\infty, 1]$ $x-1 = -(1-x) \rightarrow f(x) = -(1-x)\sqrt{1-x} = -(\sqrt{1-x})^2 \sqrt{1-x} = -\sqrt{(1-x)^3} = -g(x)$ بهم برابرند	۶
$f(x); x \geq 0 \Rightarrow D_f = [0, +\infty)$ $g(x); x^2 \geq 0 \rightarrow x \geq 0 \Rightarrow D_g = [0, +\infty)$ $D_g = D_f$ $\text{if } x \geq 0: g(x) = \sqrt{x^2} = \sqrt{x^2 x} = x \sqrt{x} = x \sqrt{x} = f(x)$ بهم برابرند	۷
$f(x); x \geq 0 \Rightarrow D_f = [0, +\infty)$ $0 \leq \sqrt{x} - \lfloor \sqrt{x} \rfloor \leq 1$ $\Rightarrow \underline{f(x) = 0}$ $g(x); x - x \geq 0 \Rightarrow x \geq x \Rightarrow x \geq 0 \Rightarrow D_g = [0, +\infty)$ $x \geq 0; x = x \Rightarrow x - x = 0 \Rightarrow \underline{g(x) = \sqrt{0} = 0}$ بهم برابرند	۸
$\text{الف) } \frac{f(1)+g(1)}{f(1)-g(1)} \quad \begin{matrix} f(1)=2 \\ g(1)=1 \end{matrix} \rightarrow \left(\frac{f+g}{f-g} \right) f(1) = \frac{2+1}{2-1} = 3$ $\text{ب) } \left(\frac{f+g}{f-g} \right) (2) = \frac{f(2)+g(2)}{\underline{f(2)-g(2)}} = 0 \quad \text{تعریف ندهد}$	۹
	۱۰