

۲. آفرین عالی نوری

$$f(x) \Rightarrow (a+1)(x+2) \rightarrow x > 1$$

$$f(x) = (a+1)(x) = \forall a + x$$

$$f(-2) = 3a + 2x \rightarrow x \leq 1$$

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

$$2f(x) = f(-2) \Rightarrow a$$

$$18a + 12 = 3a - 2 \Rightarrow a$$

$$a = \frac{-12}{10} = -\frac{6}{5}$$

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

$$f(2-\sqrt{3}) + f(2+\sqrt{3}) = ?$$

$$2-3=1 \rightarrow \frac{2-\sqrt{3}}{2} = \frac{1}{2+\sqrt{3}} \quad \left\{ \begin{array}{l} \frac{1}{2} = \sqrt{2-\sqrt{3}} \\ \frac{1}{2} = \sqrt{2+\sqrt{3}} \end{array} \right.$$

$$2 + \frac{1}{2} = 4$$

$$\left(\frac{1}{2} + 2\right)^2 = \frac{1}{2} + 2 + 2 \rightarrow 2 \rightarrow 2 + \frac{1}{2} = \sqrt{4}$$

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

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$$\left\{ \begin{array}{l} 2f(x) - 3f(-x) = 4x - x \\ 2f(-x) - 3f(x) = 2x^2 + x \end{array} \right. \rightarrow$$

$$\left\{ \begin{array}{l} 4f(x) - 6f(-x) = 4x^2 - 2x \\ 6f(-x) - 4f(x) = 12x^2 + 3x \end{array} \right.$$

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

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

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

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

$$x=-2 \rightarrow 9f(0) = 4m + 1 \rightarrow f(0) = \frac{4m+1}{9} \quad (2)$$

$$\left(\frac{3m-1}{2} = \frac{4m+1}{9} \right) \times 18 \rightarrow \begin{cases} 3m=1 \\ m=\frac{1}{3} = \frac{9}{3} \end{cases}$$

$$f(0) = \frac{9}{3}$$

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

$$a=3$$

$$2b=-12 \Rightarrow b=-6$$

$$f(x) = 3x - 6 \rightarrow f(-1) = -9$$

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$\begin{cases} f(x) = (x-1)\sqrt{1-x} \rightarrow D_f = (-\infty, 1] \\ g(x) = -\sqrt{(1-x)^3} \rightarrow D_g = (-\infty, 1] \end{cases}$ $f(-1) = -9$ $g(-1) = -9$	$D_f = D_g$ برابر د
$\begin{cases} f(x) = x\sqrt{x} \\ g(x) = \sqrt{x^3} \end{cases} \rightarrow D_f = D_g$	با عدد گذاری برای هر دو تابع برابر د
$\begin{cases} f(x) = [\sqrt{x} - \sqrt{x}] \rightarrow \sqrt{x} - [\sqrt{x}] \xrightarrow{x=9} \sqrt{9} - [\sqrt{9}] = 0 \rightarrow f(x)=9 \\ g(x) = \sqrt{x-1} \rightarrow x =x \rightarrow \sqrt{x-x} = 0 \end{cases}$ $\sqrt{x+x} = \sqrt{2x}$ $D_f = D_g \rightarrow$ ظاهراً برابر است	د
الف) $\frac{f(1) + g(1)}{f(1) - g(1)} = \frac{1+1}{1-1} = \frac{2}{0}$ ب) $\frac{f(2) + g(2)}{f(2) - g(2)} = \frac{2+2}{2-2} = \frac{4}{0}$ ج) $f(1) \cdot g(1) = 0 \cdot 1 = 0$	د
$g(x) = f(x-1)$ $\begin{cases} 3x-1=2 \rightarrow x=1 \\ 3x-1=0 \rightarrow x=\frac{1}{3} \\ 3x-1=-1 \rightarrow x=0 \\ 3x-1=-2 \rightarrow x=-\frac{1}{3} \\ 3x-1=3 \rightarrow x=\frac{4}{3} \end{cases}$ $\rightarrow (1, 1), (\frac{1}{3}, 1), (0, 1), (-\frac{1}{3}, 1), (\frac{4}{3}, 1)$ $g(x) = f(x)$ $\begin{cases} x =2 \rightarrow x=\pm 2 \\ x =3 \rightarrow x=\pm 3 \\ x =0 \rightarrow x=0 \end{cases}$ $\rightarrow (-2, 1), (2, 1), (-3, 1), (3, 1), (0, 1)$	د