

Subject: (

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Date: هفتی نصیری نژاد

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

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

سوال ۸

$$a = -1, 1$$

$$\begin{aligned} x=a & \rightarrow (a+2)(a+1) \\ x=-2 & \rightarrow 3a-4 \end{aligned} \quad \left. \begin{array}{l} \\ \end{array} \right\} \xrightarrow{\text{مقایسه}} 2x \vee x(a+1) = 3a-4+a$$

$$14a+14 = 4a-4 \rightarrow 10a = -18 \rightarrow a = -1, 1$$

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

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

سوال ۲۸

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

مقلوب متضاد

$$\sqrt{2-\sqrt{3}}$$

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

$$\begin{aligned} &\xrightarrow{\text{مربع}} (\sqrt{2-\sqrt{3}} + \sqrt{2+\sqrt{3}})^2 = 2-\sqrt{3} + 2+\sqrt{3} + 2 = 6 \\ &\sqrt{2-\sqrt{3}} + \sqrt{2+\sqrt{3}} = \sqrt{6} \rightarrow 2(\sqrt{2-\sqrt{3}} + \sqrt{2+\sqrt{3}}) + 4 = 2\sqrt{6} + 4 \end{aligned}$$

$$x=-x \rightarrow 2f(-x) - 3f(x) = 4x^2 + x \xrightarrow{\times 2} 4f(-x) - 6f(x) = 8x^2 + 2x$$

سوال ۳۸

$$x=x \rightarrow 2f(x) - 3f(-x) = 8x^2 - x \xrightarrow{\times 2} 4f(x) - 6f(-x) = 16x^2 - 2x$$

$$-2f(x) = 12x^2 + x$$

$$\rightarrow f(x) = -6x^2 - \frac{x}{2}$$

$$f(x) = -6x^2 - \frac{x}{2}$$

$$2f(x) - 3f(-x) = 8x^2 - x$$

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

سوال ۴۸

$$\textcircled{1} x=0 \rightarrow 2f(0) = 3m-1 \times 3 \rightarrow 4f(0) = 9m-3$$

$$x=-\frac{1}{2} \rightarrow 4f(0) = 14 + 2m + 3m + 1 \rightarrow 4m = 14 \rightarrow m = \frac{7}{2} = 3, 5$$

$$\textcircled{1} \rightarrow 2f(0) = 3\left(\frac{7}{2}\right) - 1 \rightarrow f(0) = \frac{15}{4}$$

Arman

$$f(x) + f\left(\frac{1}{x}\right) = \frac{3x^2 - 12x + 3}{x} \rightarrow 3x - 12 + \frac{3}{x} \xrightarrow{ax+b} \text{ سوال 85}$$

$$\frac{3}{a}\left(x + \frac{1}{x}\right) - \frac{12}{b} \rightarrow a=3, \frac{3}{b} = -12 \rightarrow b = -\frac{1}{4}$$

$$f(x) = ax + b \rightarrow f(-1) = -3 - \frac{1}{4} = -\frac{13}{4}$$

$$\begin{cases} f(x) = (x-1)\sqrt{1-x} \rightarrow x-1 = -(1-x) \rightarrow f(x) = -(1-x)^{\frac{3}{2}} \\ g(x) = -\sqrt{(1-x)^3} \rightarrow -(1-x)^{\frac{3}{2}} \end{cases} \text{ سوال 86}$$

$$g(x) = f(x)$$

برابرند

$$\begin{cases} f(x) = x\sqrt{x} \rightarrow \sqrt{x^2 \cdot x} = \sqrt{x^3} \rightarrow x \geq 0 \rightarrow \sqrt{x^3} = x \\ g(x) = \sqrt{x^3} \rightarrow x \geq 0 \end{cases} \text{ سوال 87}$$

$$f(x) = g(x)$$

برابرند

$$\begin{cases} f(x) = [\sqrt{x} - [\sqrt{x}]] \rightarrow D_f = [0, +\infty) \leftarrow x \geq 0 \\ g(x) = \sqrt{x - \ln x} \rightarrow D_g \xrightarrow{x \geq 0} \sqrt{x - x} = 0 \end{cases} \text{ سوال 88}$$

$$f(x) = [\sqrt{x} - [\sqrt{x}]] \xrightarrow{0 \leq t - [t] < 1} \text{ این فرجه صحیح هر عددی که بین صفر و 1 باشد، برابر صفر است. بنابراین برای تمام } x \geq 0 \text{ داریم } f(x) = 0$$

$$\text{هر تابع دارای دامنه یکسان } [0, +\infty) = D_f = D_g$$

$$f(x) = g(x) \text{ داریم دامنه } f(x) = g(x) = 0 \text{ است}$$

$$f = \{ (1, 2), (2, 3), (3, 1), (0, 0) \}$$

سوال 89

$$g = \{ (-1, 1), (1, 1), (2, 3), (3, 5), (0, 2), (\sqrt{5}, 1) \}$$

$$\text{الف) } \left(\frac{f+g}{f-g} \right) (1) = \frac{2+1}{2-1} = 3$$

$$\text{ب) } \left(\frac{f+g}{f-g} \right) (2) = \frac{3+3}{3-3} = \frac{6}{0} \quad \text{تعريف نسبه}$$

$$\text{ج) } f(0)g(-1) = 0 \times 1 = 0$$

$$f(x) = \{ (2, 1), (-1, 4), (0, 5), (-2, 2), (3, -1) \}$$

سوال 810

$$\rightarrow 3x-1=2 \rightarrow x=1, 3x-1=-1 \rightarrow x=0, \dots$$

$$\text{الف) } g(x) = f(3x-1) \quad g(x) = \{ (1, 1), (0, 4), (\frac{1}{3}, 5), (-\frac{1}{3}, 2), (\frac{2}{3}, -1) \}$$

$$\text{ب) } h(x) = f(|x|) \rightarrow h(x) = \{ (2, 1), (-2, 1), (0, 5), (3, -1), (-3, -1) \} \checkmark$$