

Subject:

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$$f(x) = \begin{cases} (a+1)(x+1); & x > 1 \\ a+1x & ; x < 1 \end{cases} \quad \text{if } f(0) = f(1) + a$$

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$$1 \cdot a + 1 \cdot 0 = 1 \cdot a + 1 + a$$

$$a = -1$$

$$f(x) = \sqrt{x} + \frac{1}{\sqrt{x}} \quad \text{if } f(1-\sqrt{x}) + f(1+\sqrt{x}) = 2\sqrt{4+x}$$

$$\sqrt{1-\sqrt{x}} + \frac{1}{\sqrt{1-\sqrt{x}}} + \sqrt{1+\sqrt{x}} + \frac{1}{\sqrt{1+\sqrt{x}}} = 2\sqrt{4+x}$$

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$$A = \sqrt{4+x}$$

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

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$$f(x) = x \cdot x^2 + x$$

$$f(x) = \frac{-x \cdot x^2 - x}{-x^2 - x} = \frac{-x^3 - x}{-x^2 - x}$$

$$(x+1)f(x) = x^2 f(x+1) \cdot f(x^2 - mx + m-1)$$

$$f(0) = m-1$$

$$f(0) = 8 \cdot \frac{m-1}{m} \cdot \frac{m-1}{m}$$

$$0 + 4f(0) = 14 \cdot \frac{m-1}{m} \cdot \frac{m-1}{m}$$

$$4m = 14 \cdot \frac{m-1}{m}$$

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$$f(x) + f\left(\frac{1}{x}\right) = \frac{10x^5 - 15x + 4}{x} \quad f(-1) = 10(-1)^5 - 15(-1) + 4 = -10 + 15 + 4 = 9$$

$$ax + b = \frac{a}{x} + b = \frac{ax^2 + bx + a}{x} \quad \begin{matrix} 10x^5 - 15x + 4 \\ a = 10 \quad b = -15 \\ b = -4 \end{matrix}$$

$$\begin{cases} f(x) = (x-1)\sqrt{1-x} & D_f: x \leq 1 = (-\infty, 1] & -1 \text{ إلى } 1 \rightarrow -\sqrt{2} \\ g(x) = -\sqrt{(1-x)^3} & D_g: x \leq 1 \end{cases} \quad \begin{matrix} \text{في } x=1 \text{ يوجد نقطة} \\ \text{في } x=1 \text{ يوجد نقطة} \end{matrix}$$

$$\begin{cases} f(x) = x\sqrt{x} & \rightarrow D_f: [0, +\infty) & \text{في } x=0 \text{ يوجد نقطة} \\ g(x) = \sqrt{x^3} & \Rightarrow x \geq 0 & D_g: [0, +\infty) \end{cases} \quad \begin{matrix} \text{في } x=0 \text{ يوجد نقطة} \\ \text{في } x=0 \text{ يوجد نقطة} \end{matrix}$$

$$\begin{cases} f(x) = [\sqrt{x} - \lfloor \sqrt{x} \rfloor] & x \geq 0 & D_f: [0, +\infty) & \text{في } x=0 \text{ يوجد نقطة} \\ g(x) = \sqrt{x} - |x| & x \geq 0 & D_g: [0, +\infty) \end{cases} \quad \begin{matrix} \text{في } x=0 \text{ يوجد نقطة} \\ \text{في } x=0 \text{ يوجد نقطة} \end{matrix}$$

$$f(x) = \{(1, 2), (2, 3), (3, 4), (4, 5)\} \quad g(x) = \{(1, 1), (1, 2), (2, 3), (3, 4), (4, 5), (5, 6)\}$$

$$f(1) = 2 \quad g(1) = 1 \quad \begin{matrix} \text{الف) } \left(\frac{f+g}{f-g}\right)(1) = \frac{1+2}{2-1} = 3 \\ \text{ب) } \left(\frac{f+g}{f-g}\right)(2) = \frac{2+3}{2-3} = -5 \end{matrix}$$

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

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

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

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

s.a.m $x \in \mathbb{R}$