

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

$$f(0) = (a+1)(2) = 2a+2$$

$$2f(0) = 4a+4 \quad 4a+4 = 4a-4 \Rightarrow 1 \cdot a = -1 \Rightarrow a = -1/8$$

$$f(-2) = 3a-4$$

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

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

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

$$\Rightarrow 2\sqrt{2-\sqrt{3}} + 2\sqrt{2+\sqrt{3}} + 4 = 2(\underbrace{\sqrt{2-\sqrt{3}} + \sqrt{2+\sqrt{3}}}_A) + 4 = \boxed{2\sqrt{4} + 4}$$

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

$$A^2 = 4 + 2\sqrt{3} = 4 \Rightarrow A = \sqrt{4}$$

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$$2f(2x) - 3f(x) = 4x^2 - 2x \cdot \frac{x^2}{x^2}, \quad 4f(x) - 9f(x) = 8x^2 - 2x$$

$$2f(-2x) - 3f(2x) = 4x^2 + 2x \cdot \frac{x^2}{x^2}, \quad 9f(x) - 4f(x) = 12x^2 + 2x$$

$$-5f(x) = 2 \cdot 2x^2 + 2x$$

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

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$$(x+2)f(x) - 3xf(x+2) = 4x^2 - mx + 13m - 1$$

$$x=0 \Rightarrow 2f(0) = 3m-1 \Rightarrow 4f(0) = 6m-2$$

$$x=-2 \Rightarrow 4f(0) = 10 + 2m$$

$$2f(0) = \frac{2 \cdot 2}{2} - 1 = \frac{2}{2}$$

$$10 + 2m = 6m - 2 \Rightarrow m = \frac{9}{2}$$

$$f(0) = \frac{2 \cdot 2}{2} = 2/2 = 1$$

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

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

$$x=1 \Rightarrow f(1) + f(1) = -9 \Rightarrow f(1) = -9/2$$

$$a = \frac{\Delta y}{\Delta x} \rightarrow \frac{-9+3}{-1-1} = 3$$

$$f(x) = 3x - 9$$

$$x=-1 \Rightarrow f(-1) + f(-1) = -18 \Rightarrow f(-1) = \boxed{-9}$$

$$f(1) = 3 + b = -9 \Rightarrow b = -12$$

$$f(-1) = \boxed{-9}$$

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$$f(x) = (x-1)\sqrt{1-x}$$

$$D_f = (-\infty, 1]$$

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$$g(x) = -\sqrt{1-x}$$

$$D_g = (-\infty, 1]$$

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$$f(x) = x\sqrt{x}$$

$$D_f = [0, +\infty)$$

✓

$$g(x) = \sqrt{x}$$

$$D_g = [0, +\infty)$$

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$$f(x) = [\sqrt{x} - [\sqrt{x}]] = [\sqrt{x}] - [\sqrt{x}] = 0$$

✓

$$g(x) = \sqrt{x-|x|} = 0$$

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

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

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

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

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

$$\text{ا) } g(x) = f(2x-1) = \{(1, 1), (0, 2), (\frac{1}{2}, 0), (-\frac{1}{2}, 2), (\frac{3}{2}, -1)\}$$

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

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