

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

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

$$f(0) \xrightarrow{x=0} f(0^2 + 2) = 2(0)^2 - 1 = -1$$

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

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$$f(x) = x^2 - 4x + 11 \Rightarrow (x-2)^2 + 7 \quad g(x) = x^2 + 4x + 11 \Rightarrow (x+2)^2 + 7$$

$$\frac{g(\sqrt{11}-2)}{f(\sqrt{11}+2)} = \frac{g(\sqrt{11})^2 - 11}{f(\sqrt{11})^2 + 11} = \frac{-10}{10} = -1$$

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

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

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$$f(x) + g(x) = |\sqrt{x-1} + 1| + |\sqrt{x-1} - 1| = \sqrt{x-1} + 1 + \sqrt{x-1} - 1 = 2\sqrt{x-1}$$

$$f(x) = \frac{x+1}{x^2-4x+11} \quad x^2-4x+11 \neq 0 \quad (x-1)(x-3) \neq 0 \quad g(x) = \left\{ \left(\frac{1}{2}, 1 \right), (1, 0), \left(\frac{3}{2}, 0 \right), (2, 1) \right\}$$

$$Df = \mathbb{R} - \{1, 3\}$$

$$f(0) = \frac{1}{11} \quad f(1) = \frac{2}{11-4+11} = \frac{2}{8} = \frac{1}{4}$$

$$\frac{g}{f} = \left\{ \left(1, -\frac{1}{2} \right), \left(0, \frac{1}{2} \right) \right\} \rightarrow \left\{ \left(1, -\frac{1}{2} \right), (0, 1) \right\}$$

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

$$\text{الف) } f(x) = \left\{ \left(\frac{1}{2}, 2 \right), \left(\frac{3}{2}, -1 \right), \left(\frac{5}{2}, 2 \right), \left(\frac{7}{2}, 4 \right) \right\} \rightarrow \text{مؤلفه اول}$$

$$\text{ب) } f(x) = \{(\sqrt{1}, 2), (\sqrt{3}, -1), (\sqrt{5}, 2), (\sqrt{7}, 4)\} \rightarrow \text{جزء مؤلفه اول / جزء مؤلفه دوم}$$

$$\text{ج) } f(x) + 1 = \{(-2, 3), (1, 3), (3, 4), (-1, 1)\} \rightarrow \text{مؤلفه دوم به مؤلفه اول اضافه شود}$$

$$\text{د) } \frac{f}{g} = \left\{ \left(-\frac{1}{2}, \frac{1}{2} \right), \left(1, \frac{1}{2} \right), \left(3, -\frac{1}{2} \right) \right\} = \{(1, -1), (3, -1)\} \rightarrow \text{مؤلفه اول مشترک}$$

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$$\text{ب) } \begin{cases} x^2 = 1 \rightarrow x = \pm 1 \\ x^2 = 3 \rightarrow x = \pm \sqrt{3} \\ x^2 = 4 \rightarrow x = \pm 2 \\ x^2 = -1 \rightarrow x \end{cases} \rightarrow \{(\pm 1, 2), (\pm \sqrt{3}, -1), (\pm 2, 2)\}$$