

$$f(n) = \sqrt{(\sqrt{n-4}+2)^2} \quad g(n) = \sqrt{(\sqrt{n-4}-2)^2} \quad n \geq 4$$

$$f(n) + g(n) = a + b\sqrt{n+c} \Rightarrow |\sqrt{n-4}+2| + |\sqrt{n-4}-2| = >$$

$$\sqrt{n-4}+2 + \sqrt{n-4}-2 \rightarrow 2\sqrt{n-4} = a + b\sqrt{n+c} \quad \frac{a+b}{c} = \frac{2}{-4} = -\frac{1}{2}$$

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$$f(n) : \{(2, -4), (0, \frac{2}{4})\} \quad g(n) : \{(2, -\frac{1}{4}), (0, 4)\}$$

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$$الف) f(2n) \rightarrow \{(\frac{1}{2}, 2), (\frac{3}{2}, -1), (2, 2), (-\frac{1}{2}, 4)\}$$

$$ب) f(n^2) \rightarrow \{(1, 2), (\sqrt{3}, -1), (2, 2), (-1, 2), (-\sqrt{2}, -1), (-2, 2)\}$$

$$ج) 2g^2(n) + 1 \rightarrow \{(-2, 19), (1, 3), (3, 9), (-1, 1)\}$$

$$د) \frac{xf}{y} \rightarrow \{(1, -4), (3, -1)\}$$

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$$2f : (2, 2), (3, 2), (4, 18), (-2, 0)$$

$$h = 2f + g \rightarrow \{(2, 5), (3, 5), (-2, 4)\}$$

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$$① \left(\frac{f}{g+1}\right)(n) \rightarrow g+1 \neq 0 \quad \underline{g \neq -1}$$

$$if \ n \in \mathbb{Z} \rightarrow g(n) = 0$$

$$if \ n \notin \mathbb{Z} \rightarrow \underline{g(n) = -1}$$

$$⑤ \ 2m \geq 0 \quad m \geq 0 \quad , \quad m \neq 2$$

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$$③ \ \sqrt{4n} - n \geq 0 \quad \sqrt{4n} \geq n \xrightarrow{\text{توان ۲}} 2n \geq n^2 \quad \frac{0}{+1-1+}$$

$$① \cap ② \cap ③ \rightarrow \{0, 1, 3\} \quad n^2 - 2n \leq 0 \quad [0, 2]$$

$$f(m) : \{(1,0), (2, \sqrt{2}), (4,0)\}$$

$$\frac{f(m)}{g(m)} \rightarrow \{(1,0), (2, \frac{\sqrt{2}}{2}), (4,0)\}$$

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$$y = x^3 - 3x^2 + 3x \quad \mathbb{R} : \mathbb{R} \quad (m-1)^3 + 1 = y \quad y-1 = (m-1)^3$$

$$m-1 = \sqrt[3]{y-1} \quad m = 1 + \sqrt[3]{y-1}$$

$$y = \frac{1}{x^2 - 2x} \quad yx^2 - 2yx - 1 = 0 \quad \frac{2y \pm \sqrt{b^2 - 4ac}}{2y} \quad b^2 - 4ac \geq 0$$

$$\mathbb{R}_f : (-\infty, -1] \cup (0, +\infty) \quad 4y^2 + 4y \geq 0 \quad y^2 + y \geq 0 \quad y(y+1) \geq 0 \quad \frac{-1 \pm \sqrt{1+4}}{2}$$

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$$a) \frac{-b}{2a} = \frac{-4}{2} = -2 \quad f-11+1 = 4 \quad \mathbb{R}_f : [4, +\infty)$$

$$b) \frac{-b}{2a} = -\frac{4}{-2} = 2 \quad -9+11+3 = 12 \quad \mathbb{R}_f : (-\infty, 12]$$

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$$c) \frac{-b}{2a} \rightarrow -\frac{-4}{2} = +2 \quad f-11+3 = -4 \rightarrow [-4, +\infty) \rightarrow \mathbb{R}_f : [-4, +\infty)$$

$$d) \sqrt{-x^2+4x} \quad \frac{-b}{2a} = -\frac{4}{-2} = +2 \quad -9+11=2 \quad \mathbb{R}_f = [0, 2]$$

$$a) \mathbb{R}_f : \mathbb{R}$$

$$b) \mathbb{R}_f : \mathbb{R}$$

$$c) \mathbb{R}_f : [0, +\infty)$$

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$$d) \mathbb{R} \xrightarrow{\text{تحويل}} [-, +\infty)$$

$$الف) \mathbb{R} - \{2\}$$

$$ب) \mathbb{R} - \{2\}$$

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