

(سوال ۱)

$$f(n) = \sqrt{n+2}\sqrt{n-2} = \sqrt{(\sqrt{n-2}+2)^2} \xrightarrow{n \geq 2} \sqrt{n-2} + 2$$

$$g(n) = \sqrt{n-2}\sqrt{n-2} = \sqrt{(\sqrt{n-2}-2)^2} \xrightarrow{n \geq 2} \sqrt{n-2} - 2$$

$$g(n) + f(n) = 2\sqrt{n-2} = a + b\sqrt{n+c} \rightarrow a=0/b=2/c=-2 \Rightarrow \frac{a+b}{c} \rightarrow \frac{0+2}{-2} \rightarrow \frac{-1}{1}$$

(سوال ۲)

$$\frac{g(n)}{f(n)} \rightarrow n=2 \begin{cases} g(2)=1 \\ f(2)=-2 \end{cases} \rightarrow \frac{-1}{2} \quad n=1 \begin{cases} g(1)=0 \\ f(1)=\text{چون} \end{cases} \quad n=3 \begin{cases} g(3)=5 \\ f(3)=\frac{3+2}{3-12+2} \end{cases} \quad n=0 \begin{cases} g(0)=2 \\ f(0)=\frac{2}{3} \end{cases} \rightarrow \frac{\frac{5}{2}}{\frac{2}{3}} \rightarrow \frac{15}{4}$$

$$\frac{g}{f} = \left\{ (0, 4), (1, \frac{-1}{2}) \right\}$$

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

(سوال ۳)

$$f(n) = \{(1, 2), (2, -1), (3, 2), (-1, 4)\}$$

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

$$2g^2(n)+1 = \{(-2, 19), (1, 3), (3, 4), (-1, 1)\}$$

$$\frac{2f}{g} = \{(1, \frac{4}{-1}), (3, \frac{-2}{2}), (-1, \frac{12}{0})\} \xrightarrow{n=3} \frac{2f}{g} = \{(1, -4), (3, -1)\}$$

(سوال ۴)

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

$$Df(n) \rightarrow$$

(سوال ۵)

$$n \geq 0/\sqrt{3n} - n \geq 0 \rightarrow 3n \geq n^2 \rightarrow 3n - n^2 \geq 0 \rightarrow n(3-n) \geq 0 \rightarrow \frac{3}{1+1} \rightarrow n = [0, 3] / n \neq 2 \Rightarrow$$

$$Df(n) = [1, 3] - \{2\}$$

$$Dg(n) \rightarrow \begin{array}{c} \bullet \bullet \bullet \bullet \bullet \\ \bullet \bullet \bullet \bullet \bullet \end{array} \rightarrow \mathbb{R} \Rightarrow Dg(n)+1 = \mathbb{R}$$

$$Dg(n) \cap Df(n) \rightarrow [0, 3] - \{2\}$$

سؤال (٦)

$$\frac{f(m)}{g(m)} = \left\{ \left(0, \frac{0}{3}\right), \left(2, \frac{\sqrt{2}}{3}\right), \left(4, \frac{0}{3}\right), \left(6, -\frac{\sqrt{2}}{3}\right) \right\} \rightarrow \left\{ (1,0), \left(2, \frac{\sqrt{2}}{3}\right), (4,0) \right\}$$

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سؤال (٧)

الف) $y = (x-1)^3 + 1 \rightarrow x-1 = \sqrt[3]{y-1} \rightarrow \text{Def. } \mathbb{R}$

ب) $ym^2 - 2ym - 1 = 0 \xrightarrow{\Delta \geq 0} 4y^2 + 4y \geq 0 \rightarrow y^2 + y \geq 0 \rightarrow y(y+1) \rightarrow \frac{1}{+\phi-\phi+} \rightarrow$
 $\text{Def} = (-\infty, -1] \cup [0, \infty) \xrightarrow{y \neq 0} (-\infty, -1] \cup [0, \infty)$

سؤال (٨)

الف) $x^2 - 4x + 1 \geq 0$
 $\int \frac{-b}{\pm a} = \frac{4}{1} \rightarrow 2 \quad \text{Def} = [4, \infty)$
 $x - 2 + 1 \rightarrow 4$

ب) $-x^2 + 4x + 3 \geq 0$
 $\text{ext } \int \frac{-b}{\pm a} = \frac{-4}{-1} \rightarrow 4 \quad \text{Def} = (-\infty, 12]$
 $-9 + 18 + 3 \rightarrow 12$

ج) $\sqrt{x^2 - 4x - 3} \geq 0$
 $\text{ext } \int \frac{-b}{\pm a} = \frac{4}{1} \rightarrow 2 \quad [\sqrt{v}, \infty)$
 $x - 2 - 3 \rightarrow v$

د) $\sqrt{-x^2 + 4x} \geq 0$
 $\text{ext } \int \frac{-b}{\pm a} \rightarrow \frac{-4}{-1} \rightarrow 4 \rightarrow [0, +3]$
 $-9 + 18 \rightarrow 9$

الف) $\mathbb{R}$ ب) $\mathbb{R}$ ج) $\sqrt{\mathbb{R}} \rightarrow [0, \infty)$ د) $[0, \infty)$ سؤال (٩)

سؤال (١٠)

الف) $y = \frac{x+1}{x-2}$
 $\text{Def} = \mathbb{R} - \{2\}$

ب) $y = \frac{x+1}{x+1}$
 $\text{Def} = \mathbb{R} - \{1\}$