

$$f(n) = \sqrt{n+2} \sqrt{n-2} \rightarrow g(n) = \sqrt{n-2} \sqrt{n-2} \quad n \geq 1 \quad (1)$$

$$f(n) + g(n) = a + b\sqrt{n+c} \Rightarrow \frac{a+b}{c} = 0$$

$$\sqrt{n+2} \sqrt{n-2} + \sqrt{n-2} \sqrt{n-2} = a + b\sqrt{n+c}$$

$$\sqrt{(n-2+2)} + \sqrt{(n-2-2)} = a + b\sqrt{n+c}$$

$$\sqrt{n-2} = a + b\sqrt{n+c} \rightarrow \begin{matrix} c=-2 \\ b=1 \\ a=0 \end{matrix} \rightarrow \frac{a+b}{c} = \frac{-1}{-2} = \frac{1}{2}$$

$$n^2 - 2n + c \neq 0 \Rightarrow (n-1)(n-1) = 0 \Rightarrow n=1 \quad (2)$$

$$P_g = \{1, 1, c, 0\} \Rightarrow \frac{g}{f} = \frac{g}{f} \cap P \neq \emptyset \rightarrow \{1, 1, c, 0\} - \{1, c\} = \{1, 0\}$$

$$a) f(n) = \{(1, 1), (1, 9), (1, 9), (1, 9)\} \quad (3)$$

$$b) f(n) = \{(1, 1), (1, 1), (1, 1), (1, 1), (1, 9), (1, 9)\}$$

$$c) f(n) + 1 = \{(-2, 19), (1, 9), (1, 9), (-1, 1)\}$$

$$d) \frac{f}{g} \rightarrow \{(1, -1), (1, -1), (1, -1)\}$$

$$f(n) = \{(1, 1), (1, 1), (1, 1), (1, 1)\} \quad g(n) = \{(1, 1), (1, 1), (1, 1), (1, 1)\} \quad (4)$$

$$h = \{(1, 1), (1, 1), (1, 1)\} \quad (5)$$

$$f(n) \rightarrow c(n), \Rightarrow n \geq 0$$

$$\sqrt{c(n)} \geq n \Rightarrow \frac{n^2}{n} \geq n \Rightarrow n \leq 1$$

$$f(g) = [n] + [-n] \Rightarrow P_g = \mathbb{R} \rightarrow \frac{f}{g} = \frac{f}{g} \Rightarrow f(n) = f(n)$$

$$P_g = \{1, 1, 1, 1\}$$

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$f(x) = \sqrt{5x - x^2 - 4}$, $g(x) = \{(1,0)(2,2)(3,4)(0,1)\}$ (1/10) 9
 $\{x-1\}(x-2) \leq 0$, $\{x\} = \{1, 2, 3, 4\}$ $\hookrightarrow h(x) = \frac{f(x)}{g(x)}$?
 $h(x) = \{1, 2, 3\}$ $\begin{cases} 1 \rightarrow \frac{f(1)}{g(1)} = \frac{\sqrt{5-1-4}}{0} = \frac{0}{0} \\ 2 \rightarrow \frac{f(2)}{g(2)} = \frac{\sqrt{10-4-4}}{2} = \frac{\sqrt{2}}{2} \\ 3 \rightarrow \frac{f(3)}{g(3)} = \frac{\sqrt{15-9-4}}{4} = \frac{\sqrt{2}}{4} \end{cases}$

الف) $(x-1)^2 = y \rightarrow x-1 = \sqrt{y} \rightarrow x = \sqrt{y} + 1 \Rightarrow R_f = R$ (1/10)
 ب) $x^2 - 4xy - 1 = 0 \rightarrow x = \frac{4y \pm \sqrt{16y^2 + 4}}{2} = 2y \pm \sqrt{4y^2 + 1}$ (1/10)
 $y = 0 \rightarrow x = \pm 1$ $\Rightarrow R_f = (-\infty, -1] \cup [1, +\infty)$ (1/10)

الف) $x_3 = \frac{x}{y} = 2 \rightarrow y_3 = \frac{x}{2} \rightarrow R_f = [2, +\infty)$ (1)
 ب) $\left| \frac{-4}{-2} = 2 \right| \Rightarrow R = (-\infty, 2)$
 2.) $\left| \frac{-4}{-2} = 2 \right| \Rightarrow R_f = [2, +\infty)$
 3.) $\left| \frac{-4}{-2} = 2 \right| \Rightarrow R = [2, +\infty)$

الف) $R_f = R$, ب) $R_f = R$, 2.) $R_f = [2, +\infty)$ (1/10)

الف) $x = \frac{x+1}{x-2} \rightarrow R = \{2\}$

ب) $y = \frac{x+1}{x-2} \rightarrow R = \{2\}$

$$f(n) = \frac{\sqrt{3n} - n}{n-2} \rightarrow \begin{cases} n \neq 2 \\ n \geq 0 \end{cases} (\sqrt{3n}) \rightarrow D_f = [0, 3] - \{2\} \quad (5)$$

$$\sqrt{3n} - n \geq 0 \rightarrow 3n \geq n^2 \rightarrow 0 \leq n \leq 3$$

$$g(n) + 1 \neq 0 \rightarrow g(n) \neq -1 \rightarrow [n] + [-n] \neq -1 \rightarrow n \in \mathbb{Z}$$

$$D_{\frac{f}{g+1}} = \left\{ D_f \cap D_g, g(n) \neq -1 \right\} = \left\{ 0, 1, 3 \right\}$$

$$[0, 3] - \{2\} \cap \mathbb{Z}$$

$$D_f \rightarrow \Delta n - n^2 - 2 \geq 0 \rightarrow n^2 - \Delta n + 2 \leq 0 \rightarrow 1 \leq n \leq 3 \quad (9)$$

$$D_f \cap D_g = \{1, 2, 3\}$$

$$\frac{f}{g} = h = \left\{ (1, 0), (2, \sqrt{\frac{1}{2}}), (3, 0) \right\}$$

$$(الف) \quad y = n^3 - 2n^2 + 2n - 1 + 1 = yz(n-1)^3 + 1 \quad (10)$$

$$y-1 = (n-1)^3 \rightarrow \sqrt[3]{y-1} = n-1 \rightarrow n = \sqrt[3]{y-1} + 1$$

$$R_f = \mathbb{R}$$

$$(ب) \quad y = \frac{1}{n^2 - 2n} \rightarrow n^2 y - 2ny = 1 \rightarrow n^2 y - 2ny - 1 = 0$$

$$y \neq 0 \rightarrow n = \frac{2y \pm \sqrt{4y^2 + 4y}}{2y} \rightarrow 4y(y+1) \geq 0 \rightarrow \frac{-1}{+} \leq \frac{0}{+}$$

$$y = 0 \rightarrow 0 = 1 \times \text{صفتی وجود ندارد!} \rightarrow R_f = (-\infty, -1] \cup (0, +\infty)$$