

$f(x) = \sqrt{x+4}\sqrt{x-4} \Rightarrow \sqrt{x-4+\sqrt{x-4}+4} = \sqrt{(\sqrt{x-4}+2)^2} = \sqrt{x-4}+2 \xrightarrow{x \geq 0} \sqrt{x-4}+2$ $g(x) = \sqrt{x-4}\sqrt{x-4} \Rightarrow \sqrt{x-4-\sqrt{x-4}+4} = \sqrt{(\sqrt{x-4}-2)^2} = \sqrt{x-4}-2 \xrightarrow{x \geq 0} \sqrt{x-4}-2$ $f(x)+g(x) = 2\sqrt{x-4}$ $\left. \begin{matrix} a+b\sqrt{m+c} \\ a+b\sqrt{m+c} \end{matrix} \right\} \begin{matrix} a=0, b=2, c=-4 \\ \frac{a+b}{c} = \frac{2}{-4} = -\frac{1}{2} \end{matrix}$	۱
$f(x) = \frac{x+2}{x^2-4x+3} \quad R = \{1, 3\} \Rightarrow (0, \frac{2}{3})(2, -4)$ $g(x) = \{(0, 4), (1, 0), (2, 1), (3, 5)\}$ $\frac{g}{f} = \{(0, 4), (2, -\frac{1}{4})\}$	۲
الف) $f(2x) = \{(\frac{1}{2}, 2), (\frac{3}{2}, -1), (2, 2), (-\frac{1}{2}, 4)\}$ ب) $f(2x) = \{(-1, 2), (1, 2), (\sqrt{3}, -1), (\sqrt{2}, -1), (-2, 2), (2, 2)\}$ ج) $2g(x)+1 = \{(-2, 19), (1, 3), (2, 9), (-1, 1)\}$ د) $\frac{f}{g} = \{(1, -4), (3, -1)\}$ دامنه اشتراک: $\{1, 3\}$	۳
$h = f+g \quad h = \{(-2, 4), (2, 5), (3, 5)\}$ $Dg \cap Df = D_h = \{-2, 2, 3\}$	۴
$f(x) = \frac{\sqrt{4x-x}}{x-2} \quad x \geq 0 \quad \sqrt{4x-x} \geq 0 \Rightarrow 4x-x \geq 0 \Rightarrow 3x \geq 0 \Rightarrow x \geq 0$ $g(x) = [x] + [-x] \quad D_g = \mathbb{R} \quad D_h = D_g \cap D_f = \{x g(x) \neq 0\} = \{0, 1, 2\}$ $h(x) = \left(\frac{f}{g+1}\right)(x)$	۵

دائمه را اشتراك مزانيم $f(n) = \sqrt{5n^2 - 4} \Rightarrow 0 < 5n^2 - 4 \Rightarrow \frac{1}{5} < n^2 < \frac{4}{5} \quad D_f = [1, 2]$ $f(n) = \{(1, 0), (2, 2), (3, 0)\}$ $h(n) = \frac{f(n)}{g(n)} = \{(1, 0), (2, 1), (3, 0)\}$	٦
الف) $y = n^3 - 3n^2 + 3n \Rightarrow y - 1 = (n - 1)^3 \Rightarrow n = \sqrt[3]{y - 1} + 1 \quad R = \mathbb{R}$ ب) $y = \frac{1}{n^2 - 2n} \Rightarrow y = \frac{1}{n^2 - 2n + 1 - 1} \Rightarrow y = \frac{1}{(n - 1)^2 - 1} \Rightarrow (n - 1)^2 - 1 = \frac{1}{y} \Rightarrow n = \pm \sqrt{\frac{y + 1}{y}} + 1$ $\frac{y + 1}{y} \geq 0 \Rightarrow \frac{-1}{+1 - 1} \Rightarrow R = (-\infty, -1] \cup (0, +\infty)$	٧
الف) $y = n^2 - 5n + 6 \quad \text{ext} \left \begin{smallmatrix} 2 \\ 4 \end{smallmatrix} \right. \quad R = [4, +\infty)$ ب) $y = -n^2 + 4n + 3 \quad \text{ext} \left \begin{smallmatrix} 2 \\ 12 \end{smallmatrix} \right. \quad R = (-\infty, 12]$ ج) $y = \sqrt{n^2 - 5n - 3} \quad \text{ext} \left \begin{smallmatrix} 2 \\ 2 \end{smallmatrix} \right. \quad R = [0, +\infty)$ د) $y = \sqrt{4n - n^2} \quad \text{ext} \left \begin{smallmatrix} 2 \\ 2 \end{smallmatrix} \right. \quad R = [0, 2]$	٨
الف) $y = n^3 - 3n^2 + 3n + 1 \quad R = \mathbb{R}$ ب) $y = n^3 - 4n^2 + 3n + 2 \quad R = \mathbb{R}$ ج) $y = \sqrt{n^3 - 4n^2 + 3n + 1} \quad R = [0, +\infty)$ د) $y = \left(\frac{n^3 - 5n^2 + 3n + 1}{1R} \right)^2 \quad R = [0, +\infty)$ چون بر توان ۲ است	٩
الف) $y = \frac{3n + 1}{n - 2} \quad R = \mathbb{R} - \{2\}$ ب) $y = \frac{3n + 1}{n + 1} \quad R = \mathbb{R} - \{2\}$	۱۰