

① $\sqrt{x+1} \sqrt{x-2} \rightarrow x+2\sqrt{x-2}-2 \rightarrow (x-2)+2\sqrt{x-2}+4 = (\sqrt{x-2}+2)^2$
 $f(x) = \sqrt{(\sqrt{x-2}+2)^2} \rightarrow |\sqrt{x-2}+2| \sqrt{x-2}+2$ $x \geq 2$

② $x-2\sqrt{x-2}, (x-2)-2\sqrt{x-2}+2 \rightarrow (\sqrt{x-2}-2)^2 \rightarrow |\sqrt{x-2}-2|$ $x \geq 2$
 $g(x) = \sqrt{x-2}-2$
 $f(x) = g(x), (\sqrt{x-2}-2)(\sqrt{x-2}-2) = 2\sqrt{x-2} = a+2$
 $a=0, b=2, c=-2$

$f(x) = \frac{x+2}{x^2-2x+3} \rightarrow D_f = x^2-2x+3 \neq 0$
 $(x-3)(x-1) \rightarrow x \neq 1, 3$ $D_f \cap \mathbb{R} = \{1, 3\}$

$\frac{g}{f} = \{(0, 4), (2, -\frac{1}{2})\}$ $\leftarrow$ دایره های مستقر
 $f(0) = \frac{0+2}{0-0+3} = \frac{2}{3}, g(0) = 4 \rightarrow \frac{4}{\frac{2}{3}} = 6$ $f(2) = \frac{2}{-1} = -2, g(2) = 1 \rightarrow \frac{1}{-2} = -\frac{1}{2}$

الف) $f(x) = \{(1, 2), (1, 0, -1), (2, 2), (-\frac{1}{2}, 4)\}$

ب) $f(x) = \{(1, 2), (\sqrt{3}, -1), (2, 2), (-1, 2), (-\sqrt{3}, -1), (-2, 2)\}$

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

د) $\frac{f}{g} = \{(1, -2), (3, -1)\}$ $D_f \cap D_g = \{(1, 3)\}$

$D_f \cap D_g = \{2, -2, 3\}$ $f(2, 1)$ $g(2, 3)$

$f+g = \{(2, 5), (-2, 4), (3, 5)\}$ $2, 4, 6$

$f(x) = \sqrt{\sqrt{x}-x} \xrightarrow{D_f} \sqrt{x}-x \geq 0 \rightarrow \sqrt{x} \geq x \rightarrow x \leq 1$ $x \geq 0 \rightarrow x \geq 0$

$g(x) = [x] + [-x], \{x \in \mathbb{Z} \rightarrow -1\}$ $x \neq 2$ $x \in \{0, 1, 3\}$

$g(x) + 1 \neq 0 \rightarrow g(x) \neq -1 \rightarrow x \in \mathbb{Z}$ $D_g = \{0, 1, 3\}$

$f(x) = \sqrt{5x - x^2 - 4} \rightarrow [1, 4], D_f$ $D_g = \{1, 2, 4, 5\} \xrightarrow{\cap} \{1, 2, 4\}$ منه و منج $\frac{f(x)}{g(x)} = \left\{ (1, 0), (2, \frac{\sqrt{2}}{2}), (4, 0) \right\}$	$D_f = \{x \mid 5x - x^2 - 4 \geq 0\} \rightarrow x^2 - 5x + 4 \leq 0 \quad x \in [1, 4]$ $(x-1)(x-4) \leq 0 \rightarrow \begin{array}{c c c} + & - & + \\ \hline 1 & & 4 \end{array}$
الف) $R_y, \mathbb{R} \rightarrow$ صند جمله اندر ب) $y = \frac{1}{x^2 - 2x} \rightarrow x^2 y - 2xy = 1$ $x^2 y - 2xy - 1 = 0$ $\Delta \geq 0 \quad (-2y)^2 - 4y(-1) = 4y^2 + 4y \geq 0$ $4y(y+1) \geq 0$	$R_y = (-\infty, -1] \cup (0, +\infty)$ صند جمله اندر ب) $y = 0 \rightarrow 0, \frac{1}{x^2 - 2x} \rightarrow$ صند جمله اندر ب) $y = 0 \rightarrow 0, \frac{1}{x^2 - 2x} \rightarrow$ صند جمله اندر ب) $y = 0 \rightarrow 0, \frac{1}{x^2 - 2x} \rightarrow$ صند جمله اندر
الف) $x^2 - 2x + 1 = 0 \rightarrow [1, +\infty)$ ب) $y = \frac{1}{x^2 - 2x} \rightarrow x^2 y - 2xy = 1$ $x^2 y - 2xy - 1 = 0$ $\Delta \geq 0 \quad (-2y)^2 - 4y(-1) = 4y^2 + 4y \geq 0$ $4y(y+1) \geq 0$	الف) $x^2 - 2x + 1 = 0 \rightarrow [1, +\infty)$ ب) $y = \frac{1}{x^2 - 2x} \rightarrow x^2 y - 2xy = 1$ $x^2 y - 2xy - 1 = 0$ $\Delta \geq 0 \quad (-2y)^2 - 4y(-1) = 4y^2 + 4y \geq 0$ $4y(y+1) \geq 0$
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