



الف) $x^2-5x+4 > 0 \Rightarrow (x-2)(x-4) > 0 \Rightarrow$ $\Rightarrow D_f = \mathbb{R} - [2, 4]$

ب) $x^2-6x+5 < 0 \Rightarrow (x-1)(x-5) < 0 \Rightarrow$ $\Rightarrow D_f = (1, 5)$

ج) $x^2+x+5 \geq 0 \Rightarrow (x+1)(x+5) \geq 0 \Rightarrow$ $\Rightarrow D_f = \mathbb{R} - (-5, -1)$

د) $x^2-7x+6 \leq 0 \Rightarrow (x-1)(x-6) \leq 0 \Rightarrow$ $\Rightarrow D_f = [1, 6]$

الف) $\frac{x^2-3x+2}{x-5} \geq 0 \Rightarrow \frac{(x-1)(x-2)}{x-5} \geq 0$

 $\Rightarrow D_f = (-\infty, 1) \cup (2, 5) \cup (5, +\infty)$

ب) $\frac{x^2-1}{x^2-6x+5} \geq 0 \Rightarrow \frac{(x-1)(x+1)}{(x-1)(x-5)} \geq 0$

 $\Rightarrow D_f = (-\infty, -1] \cup (5, +\infty)$

الف) $y = \sqrt{\frac{x-1}{x^2-x}} \Rightarrow y = \sqrt{\frac{(x-1)(x^2+1+x)}{x(x-1)(x+1)}} \Rightarrow \Delta < 0 \Rightarrow$ $D_f = (-\infty, -1) \cup (0, 1) \cup (1, +\infty)$

ب) $y = \sqrt{\frac{x^2-14}{x^2-5x+4}} \Rightarrow y = \sqrt{\frac{(x+4)(x-4)}{(x-1)(x-4)}} \Rightarrow$ $D_f = (-\infty, -4] \cup (1, 4) \cup (4, +\infty)$

الف) $y = \sqrt{4-x} - \sqrt{2-x}$

$4-x \geq 0 \Rightarrow x \leq 4$

$2-x \geq 0 \Rightarrow x \leq 2$

$4-x \geq 0 \Rightarrow \sqrt{4-x} \leq 4 \Rightarrow 4-x \leq 16 \Rightarrow x \geq -12$

$\Rightarrow D_f = [-12, 2]$

ب) $y = \sqrt{3-x} - \sqrt{x-2}$

$3-x \geq 0 \Rightarrow x \leq 3$

$x-2 \geq 0 \Rightarrow x \geq 2$

$3-x \geq 0 \Rightarrow \sqrt{3-x} \leq 3 \Rightarrow 3-x \leq 9 \Rightarrow x \geq -6$

$\Rightarrow D_f = [2, 3]$

$$\text{ا)} y = \sqrt{\varepsilon - r^2} \quad \varepsilon - r^2 \geq 0 \Rightarrow r^2 \leq \varepsilon \Rightarrow r \leq \sqrt{\varepsilon} \Rightarrow r \leq \sqrt{r}, -\sqrt{r} \leq r \\ \Rightarrow D_f = [-\sqrt{r}, \sqrt{r}]$$

$$\text{ب)} \sqrt{r|n| - 9} \quad r|n| - 9 \geq 0 \Rightarrow r|n| \geq 9 \Rightarrow |n| \geq \frac{9}{r} \Rightarrow n \geq \frac{9}{r}, n \leq -\frac{9}{r} \\ \Rightarrow D_f = \mathbb{R} - (-\frac{9}{r}, \frac{9}{r}) \text{ or } D_f = (-\infty, -\frac{9}{r}] \cup [\frac{9}{r}, +\infty)$$

$$\text{ا)} \sqrt[3]{\frac{|n|+1}{|n|-3}} \Rightarrow |n|-3 \neq 0 \Rightarrow n \neq \{3, -3\} \\ \Rightarrow D_f = \mathbb{R} - \{\pm 3\}$$

$$\text{ب)} \sqrt[3]{\frac{\sqrt{n}+1}{\sqrt{n}-3}} \Rightarrow n \geq 0, \sqrt{n}-3 \neq 0 \Rightarrow \sqrt{n} \neq 3 \Rightarrow n \neq 9$$

$$D_f = [0, +\infty) - \{9\}$$

$$\text{الف)} y = \frac{\sin x}{r \cos x - 1} \Rightarrow r \cos x \neq 1 \Rightarrow \cos x \neq \frac{1}{r} \Rightarrow D_f = \mathbb{R} - \{x | \cos x = \frac{1}{r}\}$$

$$\text{ب)} y = \frac{\cos x + 1}{r \sin x + 1} \Rightarrow r \sin x \neq -1 \Rightarrow \sin x \neq -\frac{1}{r} \Rightarrow D_f = \mathbb{R} - \{x | \sin x = -\frac{1}{r}\}$$

$$\text{ج)} y = \frac{\tan x + r}{\cot x - 1} \Rightarrow \tan x \neq 1, \cot x \neq 0 \Rightarrow D_f = \mathbb{R} - \{x | \tan x = 1, \cot x = 0\}$$

$$\text{د)} y = \frac{\sin x + 1}{r \sin x - r} \Rightarrow r \sin x \neq r \Rightarrow \sin x \neq 1 \Rightarrow D_f = \mathbb{R} - \{x | \sin x = 1\}$$

$$y = \frac{1}{\sqrt{r|n-r| - \frac{1}{r}}} \Rightarrow r|n-r| - \frac{1}{r} \geq 0 \Rightarrow r|n-r| \geq \frac{1}{r} \Rightarrow |n-r| \geq \frac{1}{r^2} \Rightarrow n > r + \frac{1}{r^2}, n < r - \frac{1}{r^2}$$

$$\hookrightarrow \text{مخرج صفری غرض} = r, r + \frac{1}{r^2}, r - \frac{1}{r^2} \Rightarrow \frac{1, r + \frac{1}{r^2}}{+ \frac{1}{r^2} - \frac{1}{r^2} +} \Rightarrow$$

$$D_f = (-\infty, r - \frac{1}{r^2}) \cup (r + \frac{1}{r^2}, +\infty)$$

$$\text{الف)} y = \sqrt{\varepsilon - r|n|} \Rightarrow \begin{array}{c} \text{---} | \text{---} \\ \text{---} | \text{---} \end{array} \Rightarrow D_f = [-\varepsilon, \varepsilon]$$

$$\text{ب)} y = \sqrt{\frac{|n|}{|n|}} \Rightarrow D_f = \mathbb{R} - \{0\}$$