



الف) $x^2-5x+4 > 0 \Rightarrow (x-2)(x-4) > 0 \Rightarrow \begin{array}{c|c|c|c|} + & - & + & \\ \hline & 2 & 4 & \end{array} \Rightarrow D_f = \mathbb{R} - [2, 4]$

ب) $x^2-6x+9 < 0 \Rightarrow (x-3)(x-3) < 0 \Rightarrow \begin{array}{c|c|c|c|} + & - & + & \\ \hline & 3 & 3 & \end{array} \Rightarrow D_f = (3, 3)$

ج) $x^2+x+5 \geq 0 \Rightarrow (x+1)(x+5) \geq 0 \Rightarrow \begin{array}{c|c|c|c|} + & - & + & \\ \hline & -1 & -5 & \end{array} \Rightarrow D_f = \mathbb{R} - (-5, -1)$

د) $x^2-7x+6 \leq 0 \Rightarrow (x-1)(x-6) \leq 0 \Rightarrow \begin{array}{c|c|c|c|} + & - & + & \\ \hline & 1 & 6 & \end{array} \Rightarrow D_f = [1, 6]$

الف) $\frac{x^2-2x+1}{x-5} \geq 0 \Rightarrow \frac{(x-1)(x-1)}{x-5} \geq 0 \Rightarrow \begin{array}{c|c|c|c|} - & + & - & + \\ \hline & 1 & 5 & \end{array} \Rightarrow D_f = (-\infty, 1) \cup (5, +\infty)$

ب) $\frac{x^2-1}{x^2-6x+9} \geq 0 \Rightarrow \frac{(x-1)(x+1)}{(x-3)^2} \geq 0 \Rightarrow \begin{array}{c|c|c|c|} + & - & - & + \\ \hline & -1 & 3 & 3 \end{array} \Rightarrow D_f = (-\infty, -1] \cup (3, +\infty)$

الف) $y = \sqrt{\frac{x-1}{x^2-x}} \Rightarrow y = \sqrt{\frac{(x-1)(x^2+1+x)}{x(x-1)(x+1)}} \Rightarrow \Delta < 0 \Rightarrow$ ریشه ندارد

$D_f = (-\infty, -1) \cup (0, 1) \cup (1, +\infty)$

ب) $y = \sqrt{\frac{x^2-14}{x^2-9x+14}} \Rightarrow y = \sqrt{\frac{(x+4)(x-4)}{(x-2)(x-7)}} \Rightarrow \Delta < 0 \Rightarrow$ ریشه ندارد

$D_f = (-\infty, -4] \cup (2, 4) \cup (7, +\infty)$

الف) $y = \sqrt{4-x} \Rightarrow 4-x \geq 0 \Rightarrow x \leq 4$

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

$D_f = [-12, 4]$

ب) $y = \sqrt{9-x} \Rightarrow 9-x \geq 0 \Rightarrow x \leq 9$

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

$D_f = [0, 9]$

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ا) $y = \sqrt{\varepsilon - r^2}$ $\varepsilon - r^2 \geq 0 \Rightarrow r^2 \leq \varepsilon \Rightarrow r \leq \sqrt{\varepsilon} \Rightarrow r \leq \sqrt{r}, -\sqrt{r} \leq r$ $\Rightarrow D_f = [-\sqrt{r}, \sqrt{r}]$ (۲) ✓	۶
ب) $\sqrt{r n - 9}$ $r n - 9 \geq 0 \Rightarrow r n \geq 9 \Rightarrow n \geq \frac{9}{r} \Rightarrow n \geq \frac{9}{r}, n \leq -\frac{9}{r}$ $\Rightarrow D_f = \mathbb{R} - (-\frac{9}{r}, \frac{9}{r})$ or $D_f = (-\infty, -\frac{9}{r}] \cup [\frac{9}{r}, +\infty)$	۶
ا) $\sqrt[3]{\frac{ n +1}{ n -3}}$ $\Rightarrow n -3 \neq 0 \Rightarrow n \neq \{3, -3\}$ $\Rightarrow D_f = \mathbb{R} - \{\pm 3\}$	۷
ب) $\sqrt[3]{\frac{\sqrt{n}+1}{\sqrt{n}-3}}$ $\Rightarrow n \geq 0, \sqrt{n}-3 \neq 0 \Rightarrow \sqrt{n} \neq 3 \Rightarrow n \neq 9$ $D_f = [0, +\infty) - \{9\}$ (۲) ✓	۷
الف) $y = \frac{\sin n}{r \cos n - 1} \Rightarrow r \cos n \neq 1 \Rightarrow \cos n \neq \frac{1}{r} \Rightarrow D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{r}\}$ ب) $y = \frac{\cos n + 1}{r \sin n + 1} \Rightarrow r \sin n \neq -1 \Rightarrow \sin n \neq -\frac{1}{r} \Rightarrow D_f = \mathbb{R} - \{k\pi + \frac{\pi}{r}, k\pi + \frac{3\pi}{r}\}$ ج) $y = \frac{\tan n + r}{\cot n - 1} \Rightarrow \tan = \frac{\sin}{\cos} \Rightarrow \cos n \neq 0, \cot n \neq 1 \Rightarrow D_f = \mathbb{R} - \{k\pi, k\pi + \frac{\pi}{r}\}$ د) $y = \frac{\sin n + 1}{r \sin n - r} \Rightarrow r \sin n \neq 1 \Rightarrow \sin n \neq \frac{1}{r} \Rightarrow \sin n \neq \pm \frac{1}{r} \Rightarrow D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{r}\}$ (۲) ✓	۸
$y = \frac{1}{\sqrt{r n-r - \frac{1}{r}}}$ $\Rightarrow r n-r - \frac{1}{r} \geq 0 \Rightarrow r n-r \geq \frac{1}{r} \Rightarrow n-r \geq \frac{1}{r^2} \Rightarrow n > r, r, n < r, r$ $\hookrightarrow$ مخرج صفری غرض $= r, r, 1/r \Rightarrow \frac{1/r, r}{+ \frac{1}{r} - \frac{1}{r} +} \Rightarrow$ $D_f = (-\infty, 1/r) \cup (r, +\infty)$ (۲) ✓	۹
الف) $y = \sqrt{\varepsilon - r n }$ $\Rightarrow -\frac{1}{r}, \frac{1}{r} = \frac{\varepsilon}{r} \Rightarrow D_f = [-\frac{1}{r}, \frac{1}{r}]$ ب) $y = \sqrt{\frac{ n }{ n }}$ $\Rightarrow D_f = \mathbb{R} - \{0\}$ (۲) ✓	۱۰