

$$1) y = \sqrt{\frac{x^2-9}{x^2-4}} \Rightarrow \frac{x^2-9}{x^2-4} \geq 0 \Rightarrow \frac{(x-3)(x+3)}{(x-2)(x+2)} \geq 0$$

① $x^2-9 \geq 0 \Rightarrow x(x-4) < 0$

② $x^2-9 \leq 0 \Rightarrow x(x-4) > 0$

③ $x^2-9 \geq 0 \Rightarrow x(x-4) < 0$

④ $x^2-9 \leq 0 \Rightarrow x(x-4) > 0$

DF: $(-1, 0) \cup (0, 1) \cup [4, +\infty)$

$$2) y = \sqrt{\frac{x^2-2x}{x^2-x}} \Rightarrow \frac{x^2-2x}{x^2-x} \geq 0 \Rightarrow \frac{x(x-2)}{x(x-1)} \geq 0$$

① $x^2-2x \geq 0 \Rightarrow x(x-2) \geq 0$

② $x^2-2x \leq 0 \Rightarrow x(x-2) < 0$

③ $x^2-x \geq 0 \Rightarrow x(x-1) \geq 0$

④ $x^2-x \leq 0 \Rightarrow x(x-1) < 0$

DF: $\mathbb{R} - \{0, -1, 1\}$

$$1) y = \frac{x+1}{\sqrt{x+1}} \Rightarrow \frac{x+1}{\sqrt{x+1}} \geq 0 \Rightarrow x+1 \geq 0 \Rightarrow x \geq -1$$

DF: $\mathbb{R}^+$

$$2) y = \frac{1}{\sqrt{x+1}} \Rightarrow \frac{1}{\sqrt{x+1}} \geq 0 \Rightarrow x+1 \geq 0 \Rightarrow x \geq -1$$

DF: $\mathbb{R}^+$

$$1) y = \sqrt{x-[x]} \Rightarrow x-[x] \geq 0 \Rightarrow x \geq [x]$$

DF: $(-\infty, 1)$

$$2) y = \frac{1}{\sqrt{x-[x]}} \Rightarrow \sqrt{x-[x]} > 0 \Rightarrow x-[x] > 0 \Rightarrow x > [x]$$

DF: $(-\infty, 1)$

$$1) y = \sqrt{[x-\frac{1}{x}] + [x+\frac{1}{x}]} \Rightarrow [x-\frac{1}{x}] + [x+\frac{1}{x}] \geq 0 \Rightarrow [x-\frac{1}{x}] + [x-\frac{1}{x}+1] \geq 0 \Rightarrow [x-\frac{1}{x}] + [x-\frac{1}{x}] + 1 \geq 0 \Rightarrow 2[x-\frac{1}{x}] + 1 \geq 0$$

DF: $[\frac{1}{2}, +\infty)$

$$2) y = \sqrt{[x-\frac{1}{x}] + [x+\frac{1}{x}]} \Rightarrow [x-\frac{1}{x}] + [x+\frac{1}{x}] \geq 0 \Rightarrow [x-\frac{1}{x}] + [x-\frac{1}{x}+1] \geq 0 \Rightarrow [x-\frac{1}{x}] + [x-\frac{1}{x}] + 1 \geq 0 \Rightarrow 2[x-\frac{1}{x}] + 1 \geq 0$$

DF: $\{x \mid x = k + \frac{1}{x}, k \in \mathbb{Z}\}$

$$1) y = \frac{r}{\sin x-1} \Rightarrow \sin x-1 \neq 0 \Rightarrow \sin x \neq 1$$

DF: $\mathbb{R} - \{k\pi + \frac{\pi}{2}\}$

$$2) y = \frac{r}{\sin x-1} \Rightarrow \sin x-1 \neq 0 \Rightarrow \sin x \neq 1 \Rightarrow \sin x \neq \frac{1}{r} \Rightarrow \sin x \neq \pm \frac{1}{r}$$

DF: $\mathbb{R} - \{k\pi + \frac{\pi}{2}\}$

$$1) y = \sqrt{r \sin n - 1} \Rightarrow r \sin n - 1 \geq 0 \Rightarrow r \sin n \geq 1 \Rightarrow \sin n \geq \frac{1}{r}$$



$$DF = \left[K\pi + \frac{\pi}{4}, K\pi + \frac{3\pi}{4} \right] \\ \left[rK\pi + \frac{\pi}{4}, rK\pi + \frac{3\pi}{4} \right]$$

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$$r_1 y = \sqrt{\cos n - 1} \Rightarrow \cos n - 1 \geq 0 \Rightarrow \cos n \geq 1$$

$$DF = \{K\pi\}$$

$$1) \cos y = |n| \cdot r \Rightarrow$$

$$-1 \leq \cos y \leq 1 \Rightarrow -1 \leq |n| \cdot r \leq 1 \Rightarrow r \leq |n| \leq \frac{1}{r}$$

$$\textcircled{1} r \leq n \leq \frac{1}{r} \\ \textcircled{2} -\frac{1}{r} \leq n \leq -r$$

$$DF = [r, \frac{1}{r}] \cup [-\frac{1}{r}, -r]$$

2) ✓

$$r_1 y = \arcsin(r^n + r^{n+1}) \Rightarrow -1 \leq r^n + r^{n+1} \leq 1$$

$$\textcircled{1} r^n + r^{n+1} \geq 1 \Rightarrow r^n(r+1) \geq 1 \Rightarrow (n+1)(n+r) \geq 0 \Rightarrow n \leq -r \leq n+1$$

$$\textcircled{2} r^n + r^{n+1} \leq -1 \Rightarrow r^n(r+1) \leq -1 \Rightarrow n(n+r) \leq 0 \Rightarrow -r \leq n \leq 0$$

$$DF = [-r, 0] \cup [0, \frac{1}{r}]$$

$$1) y = \sqrt{r \cdot \log_r(n-r)} \Rightarrow r \cdot \log_r(n-r) \geq 0 \Rightarrow \log_r(n-r) \geq 0 \Rightarrow n-r \geq 1 \Rightarrow n \geq r+1$$

$$\textcircled{1} n-r \geq 1 \Rightarrow n \geq r+1$$

$$\textcircled{2} n-r \geq 0 \Rightarrow n \geq r$$

$$DF = [r+1, \infty)$$

2) ✓

$$r_1 y = \log(n^r - n) \Rightarrow (n^r - n) \geq 0 \Rightarrow n(n^{r-1} - 1) \geq 0 \Rightarrow n^{r-1} \geq 1 \Rightarrow n \geq 1$$

$$DF = [1, \infty)$$

$$1) y = \frac{r}{\varepsilon^n + 1} \Rightarrow \varepsilon^n + 1 \neq 0 \Rightarrow \varepsilon^n \neq -1$$

$$DF = \mathbb{R}$$

$$r_1 y = \frac{r}{\varepsilon^n - 1} \Rightarrow \varepsilon^n - 1 \neq 0 \Rightarrow \varepsilon^n \neq 1 \Rightarrow \varepsilon^n = 1 \Rightarrow n = 0$$

$$DF = \mathbb{R} - \{0\}$$

2) ✓

$$w_1 y = \frac{r}{\varepsilon^{n-r}} \Rightarrow \varepsilon^{n-r} \neq 0 \Rightarrow \varepsilon^{n-r} = (r^r)^n \neq r^1 \Rightarrow r^{rn} \neq r^1 \Rightarrow rn \neq 1 \Rightarrow n \neq \frac{1}{r}$$

$$DF = \mathbb{R} - \{\frac{1}{r}\}$$

$$r_1 y = \frac{r}{\varepsilon^{n-r}} \Rightarrow \varepsilon^{n-r} \neq 0 \Rightarrow \varepsilon^n \neq r$$

$$DF = \mathbb{R} - \{\log_r r\}$$

$$1) y = (\varepsilon^{n+1})! \Rightarrow \varepsilon^{n+1} \in \mathbb{W} \Rightarrow \varepsilon n \in \mathbb{W} \Rightarrow n \in \frac{\mathbb{W}-1}{\varepsilon}$$

$$DF = \{n | n = \frac{k-1}{\varepsilon}, k \in \mathbb{W}\}$$

2) ✓

$$r_1 y = \left(\frac{r_n - r}{r_n - \delta} \right)! \Rightarrow$$

$$\frac{r_n - r}{r_n - \delta} \in \mathbb{W} \Rightarrow r_n - r \in r_n \mathbb{W} - \delta \mathbb{W} \rightarrow r_n - r \in \mathbb{W} - \delta \mathbb{W} \rightarrow n \in \frac{-\delta \mathbb{W} + r}{r - r \mathbb{W}} = n \in \frac{-\delta \mathbb{W} + r}{r(1 - \mathbb{W})}$$

$$DF = \{n | n = \frac{k-1}{r(1-\mathbb{W})}, k \in \mathbb{W}\}$$