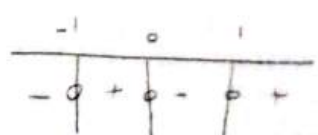


$1) y = \sqrt{\frac{x^3 - 4x}{x^3 - x}}$ $\frac{x^3 - 4x}{x^3 - x} \geq 0 \Rightarrow \frac{x(x-4)}{x(x^2-1)} \geq 0$ $D_f = (-\infty, -1) \cup (1, 4) \cup (4, +\infty)$	$2) y = \sqrt{\frac{x^3 - 2x^2}{x^3 - x}} \quad \frac{x^3 - 2x^2}{x^3 - x} \geq 0$ $\frac{x^2(x-2)}{x(x^2-1)} \geq 0 \quad D_f = \mathbb{R}$ $\begin{array}{c c c c c } + & + & + & + & + \end{array}$	۱
$1) y = \frac{x+1}{\sqrt{x+ x }}$ $x+ x \geq 0 \Rightarrow x \geq -x$ $D_f = \mathbb{R}$	$2) y = \frac{1}{\sqrt{x x }}$ $x x \geq 0 \Rightarrow D_f = \mathbb{R}^+$	۲
$1) y = \sqrt{2 - [x]}$ $2 - [x] \geq 0 \Rightarrow [x] \leq 2$ $x < 3$ $D_f = (-\infty, 3)$	$2) y = \frac{1}{\sqrt{2 - [x]}}$ $2 - [x] > 0 \Rightarrow [x] < 2 \Rightarrow x < 2$ $D_f = (-\infty, 2)$	۳
$1) y = \sqrt{[x - \frac{1}{x}] + [x + \frac{1}{x}]}$ $[x - \frac{1}{x}] + [x + \frac{1}{x}] \geq 0$ $x < \frac{1}{x}$ $x > \frac{1}{x}$ $D_f = [\frac{1}{x}, +\infty)$	$2) y = \sqrt{[x - \frac{1}{x}] + [-x + \frac{1}{x}]}$ $[x - \frac{1}{x}] + [-x + \frac{1}{x}] \neq 0 \Rightarrow \begin{cases} a \in \mathbb{Z} & [a + (-a)] = 0 \\ a \in \mathbb{Z} & [a] + [-a] = -1 \end{cases}$ $\Rightarrow x - \frac{1}{x} \in \mathbb{Z}$ $D_f = \{x \mid x = k + \frac{1}{x} \text{ or } k + \frac{1}{x}, k \in \mathbb{Z}\}$	۴
$1) y = \frac{r}{\sin x - 1}$ $\sin x - 1 \neq 0 \Rightarrow$ $D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{2}\}$	$2) y = \frac{r}{r \sin^2 x - 1}$ $r \sin^2 x \neq 1 \Rightarrow \sin^2 x \neq \frac{1}{r} \Rightarrow \sin x \neq \pm \sqrt{\frac{1}{r}}$ $D_f = \mathbb{R} - \{k\pi + \frac{\pi}{2}, k \in \mathbb{Z}\}$	۵

$\alpha) y = \sqrt{r \sin x - 1}$ $r \sin x - 1 \geq 0 \rightarrow r \sin x \geq 1$ $\sin x \geq \frac{1}{r}$ $D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{r} \right\}$	$\beta) y = \sqrt{\cos x - 1}$ $\cos x - 1 \geq 0 \rightarrow \cos x \geq 1$ $D_f = \mathbb{R} - \{ k\pi \}$	6
$\alpha) \cos y = x ^{-1/r}$ $-1 \leq x ^{-1/r} \leq 1 \rightarrow$ $r \leq x \leq r$ $D_f = (r, r] \cup [-r, -r]$	$\beta) y = \arcsin(x^r + r^r + 1)$ $-1 \leq x^r + r^r + 1 \leq 1$ $x^r + r^r + 1 \geq -1 \rightarrow x^r + r^r \geq -2 \rightarrow (x+r)(x+1) \geq 0$ $x^r + r^r + 1 \leq 1 \rightarrow x^r + r^r \leq 0 \rightarrow x(x+r) \leq 0 \rightarrow -r \leq x \leq 0$ $D_f = (-\infty, -r] \cup [-r, 0)$	7
$\alpha) y = \sqrt{r - \log_r(x-r)}$ $r - \log_r(x-r) \geq 0$ $\log_r(x-r) \leq r$ $x-r \leq r$ $x \leq 1$ $D_f = (r, 1]$	$\beta) y = \log(x^r - r)$ $x^r - r > 0 \rightarrow x(x^{r-1} - 1) > 0$ $x(x-1)(x+1) > 0$  $D_f = [-1, 0) \cup (1, +\infty)$	8
$\alpha) y = \frac{r}{x^n + 1}$ $x^n + 1 \neq 0$ $x^n \neq -1$ $D_f = \mathbb{R}$	$\beta) y = \frac{r}{x^n - 1}$ $x^n - 1 \neq 0$ $x^n \neq 1$ $D_f = \mathbb{R} - \{0\}$	9
$\alpha) y = \frac{r}{x^n - r}$ $x^n - r \neq 0$ $x^n \neq r$ $x \neq \log_r r$ $D_f = \mathbb{R} - \{\log_r r\}$	$\beta) y = \frac{r}{x^n - r^r}$ $x^n - r^r \neq 0$ $x^n \neq r^r$ $x \neq \log_r r^r$ $D_f = \mathbb{R} - \{\log_r r^r\}$	
$\alpha) y = (\varepsilon x + 1)!$ $\varepsilon x + 1 \in \mathbb{N} \rightarrow \varepsilon w \in \mathbb{N} - 1 \rightarrow$ $x = \frac{w-1}{\varepsilon}$ $D_f = \left\{ x \mid x = \frac{k-1}{\varepsilon}, k \in \mathbb{N} \right\}$	$\beta) \left(\frac{r(x-r)}{r(x-0)} \right) \mid \frac{r(x+r)}{r(x-0)} \in \mathbb{N} \rightarrow \frac{r(x-r)}{r(x-0)} \in \mathbb{N} \rightarrow x-r \in \mathbb{N}(x-w-0)$ $\rightarrow x+r \in \mathbb{N}(x-w-0) \rightarrow x-r \in \mathbb{N}(x-w-0)$ $x = \frac{-r+\delta w}{r(w-r)}$ $D_f = \left\{ x \mid x = \frac{-r+\delta k}{r(w-r)}, k \in \mathbb{N} \right\}$	10