

$$a) \sqrt{\frac{x^2-4x}{x^2-x}} \Rightarrow \frac{x(x-4)}{x(x-1)} \geq 0 \Rightarrow \frac{-1 \quad 0 \quad 1 \quad 2 \quad 3 \quad 4}{- \quad + \quad - \quad + \quad - \quad +}$$

$$Df = (-1, 0) \cup (0, 1) \cup [4, \infty)$$

$$b) \sqrt{\frac{x^2-x^2}{x^2-x}} \Rightarrow \frac{x^2(x^2-1)}{x^2(x-1)} \geq 0 \Rightarrow \frac{0 \quad 1 \quad -1}{+ \quad - \quad +}$$

$$\Rightarrow Df = \mathbb{R} - \{-1, 0, 1\}$$

$$a) \frac{x+1}{\sqrt{x+1x}} \Rightarrow x+1 > 0 \quad Df = (0, +\infty)$$

$$b) y = \frac{1}{\sqrt{x+1x}} \Rightarrow x+1 > 0 \quad Df = (0, +\infty)$$

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

$$[x] \leq r$$

$$Df = (-\infty, r)$$

$$b) y = \frac{1}{\sqrt{r-[x]}} \Rightarrow r-[x] > 0 \quad [x] < r \quad Df = (-\infty, r)$$

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

$$[-\frac{1}{r}] + [x-\frac{1}{r}+1] \geq 0 \Rightarrow r[x-\frac{1}{r}] \geq -1 \Rightarrow [x-\frac{1}{r}] \geq -\frac{1}{r}$$

$$\Rightarrow x-\frac{1}{r} \geq 0 \Rightarrow x \geq \frac{1}{r} \Rightarrow Df = [\frac{1}{r}, \infty)$$

$$b) \sqrt{[x-\frac{1}{r}] + [-x+\frac{1}{r}]} \rightarrow [x-\frac{1}{r}] + [-(x-\frac{1}{r})] \geq 0$$

$$x \in \mathbb{Z} \rightarrow \checkmark \quad x \notin \mathbb{Z} \rightarrow -1 \quad Df = \{x \mid x = k + \frac{1}{r}, k \in \mathbb{Z}\}$$

$$a) \frac{r}{\sin x - 1} \rightarrow \sin x - 1 \neq 0 \quad \sin x \neq 1$$

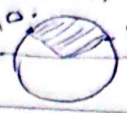
$$Df = \mathbb{R} - \{2k\pi + \frac{\pi}{2}\} \quad x \neq \frac{\pi}{2}$$

$$b) y = \frac{r}{r \sin^2 x - 1} \rightarrow r \sin^2 x - 1 \neq 0$$

$$\sin^2 x \neq \frac{1}{r}$$

$$\sin x \neq \pm \frac{1}{\sqrt{r}}$$

$$\sin x \neq \pm \frac{1}{\sqrt{r}} \quad \frac{1}{\sqrt{r}} \leq \frac{\sqrt{r}}{r}$$

$\lambda = \sqrt{r \sin x - 1} \rightarrow \sqrt{r \sin x - 1} > 0 \rightarrow \sqrt{\cos x - 1} \rightarrow \cos x - 1 > 0 \rightarrow \cos x > 1$
 $D_f = [2k\pi + \frac{\pi}{2}, 2k\pi + \frac{3\pi}{2}]$  $D_f = \{2k\pi\}$

i) $\cos y = |x| + r \Rightarrow -1 \leq |x| + r \leq 1$

$D_f = [-r, -r] \cup [-1, 0]$
 $r \leq |x| \leq \epsilon \rightarrow r \leq x \leq \epsilon \rightarrow D_f = -\epsilon \leq x \leq -r$ ✓

ii) $\arcsin(x^r + rx + 1) \Rightarrow -1 \leq x^r + rx + 1 \leq 1$

1) $x^r + rx + 1 \leq 1 \Rightarrow x(\frac{x}{r} + r) \leq 0$
 2) $x^r + rx + 1 \geq -1 \Rightarrow x^r + rx + 2 \geq 0 \Rightarrow \frac{-r}{-r} \frac{-1}{-1}$

i) $y = \sqrt{r - \log_r(x-r)} \rightarrow r - \log_r(x-r) \geq 0 \Rightarrow \log_r(x-r) \leq r \Rightarrow x-r \leq r^r$
 $D_f = (-1, 0) \cup (1, \infty)$

ii) $y = \frac{r}{x^r + 1}$
 $\{x^r + 1 \neq 0\}$
 $\{x^r \neq -1\}$
 $D_f = \mathbb{R}$

iii) $y = (x+1)!$
 $x+1 \in \mathbb{N}$
 $x \in \mathbb{N}-1$
 $x \in \frac{\mathbb{N}-1}{\epsilon}$
 $\Rightarrow \{n | n \in \frac{k-1}{\epsilon}, k \in \mathbb{N}\}$