

$$a) \sqrt{\frac{x^2-4x}{x^2-x}} \Rightarrow \frac{x(x-4)}{x(x-1)} \geq 0 \Rightarrow \frac{-1 \quad 0 \quad 1 \quad 2 \quad 3 \quad 4}{- \quad + \quad - \quad + \quad - \quad +} \quad \text{--- 19}$$

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

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

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

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

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

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

$$[x] \leq r$$

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

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

$$[x] < r$$

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

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

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

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

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

$$x \in \mathbb{Z} \rightarrow 0 \checkmark$$

$$x \notin \mathbb{Z} \rightarrow -1$$

$$x-\frac{1}{r} \in \mathbb{Z} \Rightarrow$$

$$Df = \{x \mid x = k + \frac{1}{r}, k \in \mathbb{Z}\}$$

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

$$\sin x \neq 1$$

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

$$x \neq \frac{\pi}{2}$$

$$\frac{\pi}{2}$$

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

$$r \sin^2 x \neq 1$$

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

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

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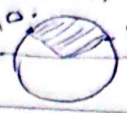
$$\sin x \neq \pm \frac{1}{\sqrt{r}}$$

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

ii) $\cos y = |n| + r \Rightarrow -1 \leq |n| + r \leq 1$
 $r \leq |n| \leq \epsilon \rightarrow r \leq n \leq \epsilon \rightarrow D = [-\epsilon, -r] \cup [r, \epsilon]$

$D = [-r, -r] \cup [-1, 0]$

$D_f = [-\epsilon, -r] \cup [r, \epsilon]$

iii) $\arcsin(n^r + r n + 1) \Rightarrow -1 \leq n^r + r n + 1 \leq 1$

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

iv) $y = \sqrt{r - \log(n-r)} \rightarrow r - \log(n-r) \geq 0 \Rightarrow \log(n-r) \leq r \Rightarrow n-r \leq 10^r$
 $D = (-1, 0) \cup (1, \infty)$

v) $y = \frac{r}{\epsilon^n + 1}$
 $\epsilon^n + 1 \neq 0 \Rightarrow \epsilon^n \neq -1 \Rightarrow D = \mathbb{R}$
 vi) $y = \frac{r}{\epsilon^n - 1}$
 $\epsilon^n - 1 \neq 0 \Rightarrow \epsilon^n \neq 1 \Rightarrow D = \mathbb{R} - \{0\}$
 vii) $y = \frac{r}{\epsilon^n - r}$
 $\epsilon^n - r \neq 0 \Rightarrow \epsilon^n \neq r \Rightarrow D = \mathbb{R} - \{\log \epsilon^r\}$

viii) $y = (r n + 1)!$
 $r n + 1 \in \mathbb{N}$
 $\{n \in \mathbb{N} \mid n \in \frac{k-1}{r}, k \in \mathbb{N}\}$
 ix) $y = \left(\frac{r n - r}{r n - a}\right)!$
 $\frac{r n - r}{r n - a} \in \mathbb{N}$
 $r n - r \in \{r n - a, r n - a + r, r n - a + 2r, \dots\}$
 $n \in \frac{-a + r}{r - r w}$