

الف) $\sqrt{4-\sqrt{2-x}}$

$2-x \geq 0$ $2 \geq x$ (I)

$4-\sqrt{2-x} \geq 0$ $4 \geq \sqrt{2-x} \rightarrow 16 \geq 2-x$
 $D = [-1, 2]$

$x \geq -1$ (II)

ب) $\sqrt{3-\sqrt{x-2}}$

$x-2 \geq 0$ $x \geq 2$ (I)

$3-\sqrt{x-2} \geq 0$ $3 \geq \sqrt{x-2}$ $9 \geq x-2$ $11 \geq x$ (II)

$D = (2, 11) \rightarrow [2, 11]$

الف) $\sqrt{4-2x^2}$

$4-2x^2 \geq 0$

$4 \geq 2x^2$

$2 \geq x^2$

$\sqrt{2} \geq x \geq -\sqrt{2}$

$D = [-\sqrt{2}, \sqrt{2}]$

ب) $\sqrt{3|x|-9}$

$3|x|-9 \geq 0$

$3|x| \geq 9$

$|x| \geq 3$

$x \leq -3$ $\cup$ $x \geq 3$

$D = (-\infty, -3] \cup [3, +\infty)$

الف) $y = \sqrt{\frac{|x|+1}{|x|-3}}$

$|x|-3 \neq 0$

$|x| \neq 3$

$x \neq 3$
 $x \neq -3$ (I)

$D = \mathbb{R} - \{-3, 3\}$

$\sqrt{x}-3 \neq 0$

$\sqrt{x} \neq 3$

$x \neq 9$

$x \geq 0$

$D = [0, +\infty) - \{9\}$

الف) $y = \frac{\sqrt{3-|x|}}{|x|+2}$

$3-|x| \geq 0$

$3 \geq |x|$

$-3 \leq x \leq 3$

$|x|+2 \neq 0$

$|x| \neq -2$

$D = [-3, 3]$

ب) $y = \frac{\sqrt{4-x^2}}{|x|-1}$

$4-x^2 \geq 0$

$(2-x)(2+x) \geq 0$

$[-2, 2]$ (I)

$|x|-1 \neq 0$

$|x| \neq 1$

$x \neq 1, x \neq -1$ (II)

$D = [-2, 2] - \{-1, 1\}$

الف) $y = \frac{x+1}{\sqrt{x+|x|}}$

$x+|x| > 0$

$D = (0, +\infty) = \mathbb{R}^+$

ب) $y = \frac{1}{\sqrt{x|x|}}$

$x|x| > 0$

$D = (0, +\infty) = \mathbb{R}^+$

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

$$r - [x] \geq 0$$

$$r \geq [x]$$

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

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

$$r - [x] > 0$$

$$r > [x]$$

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

$$c) y = \frac{1}{x[x]}$$

$$x[x] \neq 0$$

$$x \neq [0, 1)$$

$$D = (r, r - [0, 1))$$

$$d) y = \frac{1}{\sqrt{-x[x]}}$$

$$-x[x] > 0$$

$$x[x] < 0$$

$$D = \emptyset$$

$$e) y = \sqrt{[x - \frac{1}{x}] + [x + \frac{1}{x}]}$$

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

$$D = [\frac{1}{x}, +\infty)$$

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

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

$$[x + \frac{1}{x}] \geq \frac{1}{r} \rightarrow x + \frac{1}{x} \geq 1$$

$$x \geq \frac{1}{r}$$

$$f) y = \sqrt{[x - \frac{1}{x}] + [-x + \frac{1}{x}]}$$

$$a \in \mathbb{Z}$$

$$[a] + [-a] = 0$$

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

$$D = \{x | x = k + \frac{1}{k}, k \in \mathbb{Z}\}$$

$$g) y = \frac{1}{r \sin x - 1}$$

$$r \sin^2 x - 1 \neq 0$$

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

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

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

$$D = (r, r - \{k\frac{\pi}{2} + \frac{\pi}{4}\})$$



$$h) y = \frac{\cot x + 1}{\tan x + 1}$$

$$\cot x \neq 0$$

$$\tan x \neq 0$$

$$\frac{\cos x}{\sin x} \rightarrow \sin x \neq 0$$

$$\tan x + 1 \neq 0$$

$$\tan x \neq -1$$

$$D = (r, r - \{k\frac{\pi}{2}, k\pi - \frac{\pi}{4}\})$$



$$i) y = \sqrt{r \sin x - 1}$$

$$r \sin x - 1 \geq 0$$

$$r \sin x \geq 1$$

$$D = [r, r + \frac{\pi}{2}, r, r + \frac{3\pi}{2}]$$

$$\sin x \geq \frac{1}{r}$$



$$j) y = \sqrt{1 - r \cos x}$$

$$1 - r \cos x \geq 0$$

$$1 \geq r \cos x$$

$$D = [r, r + \frac{\pi}{2}, r, r + \frac{3\pi}{2}]$$

$$\frac{1}{r} \geq \cos x$$

