

1415

(1) $y = \sqrt{4 - \sqrt{2-x}}$ $2-x \geq 0$

$4 - \sqrt{2-x} \geq 0$
 $(4)^2 \geq (\sqrt{2-x})^2$
 $16 \geq 2-x \rightarrow 14 \geq -x \rightarrow -14 \leq x \rightarrow x \geq -14$

$2 \geq x \rightarrow x \leq 2$

$D_f = [-14, 2]$

(ب) $y = \sqrt{3 - \sqrt{x-2}}$ $x-2 \geq 0 \rightarrow x \geq 2$

$3 - \sqrt{x-2} \geq 0 \rightarrow 3^2 \geq (\sqrt{x-2})^2$
 $9 \geq x-2 \rightarrow 11 \geq x \rightarrow x \leq 11$

$D_f = [2, 11]$

(2) (الف) $y = \sqrt{4 - 2x^2}$ $4 - 2x^2 \geq 0 \rightarrow 4 \geq 2x^2$
 $2 \geq x^2 \rightarrow x^2 \leq 2$
 $-\sqrt{2} \leq x \leq \sqrt{2}$

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

(ب) $y = \sqrt{3|x|-9}$ $3|x| \geq 9$
 $|x| \geq 3$
 $x \geq 3$
 $x \leq -3$

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

(3) (الف) $y = \sqrt[3]{\frac{|x|+1}{|x|-3}}$ $|x|-3 \neq 0$
 $|x| \neq 3 \rightarrow x \neq \pm 3$

$D_f = \mathbb{R} - \{\pm 3\}$
 $D_f = (-\infty, -3) \cup (-3, 3) \cup (3, \infty)$

(ب) $y = \sqrt[3]{\frac{\sqrt{x}+1}{\sqrt{x}-3}}$ $\sqrt{x}-3 \neq 0 \rightarrow \sqrt{x} \neq 3$
 $x \neq 9$

* در این ۲ تابع چون مخرج را در یکال نبرد است محدودیت با نقطه ریشه خارج است

$\sqrt{x} \geq 0 \rightarrow x \geq 0$

چون شرط داریم باید مثبت منفی را انتخاب کرد

$D_f = [0, 9) \cup (9, +\infty)$

$$\text{الف) } y = \frac{\sqrt{3-|x|}}{|x|+2} \rightarrow 3-|x| \geq 0$$

$$3 \geq |x| \rightarrow |x| \leq 3$$

$$-3 \leq x \leq 3$$

$$D_f = [-3, 3]$$

$$|x|+2 \neq 0 \rightarrow |x| \neq -2$$

مطلوبه برقرار

$$\text{ب) } y = \frac{\sqrt{4-x^2}}{|x|-1} \rightarrow 4-x^2 \geq 0 \rightarrow 4 \geq x^2 \rightarrow x^2 \leq 4$$

$$-2 \leq x \leq 2$$

$$|x|-1 \neq 0 \rightarrow |x| \neq 1 \rightarrow x \neq \pm 1$$

$$D_f = [-2, 2] - \{\pm 1\} = [-2, -1) \cup (-1, 1) \cup (1, 2]$$

$$\text{الف) } y = \frac{x+1}{\sqrt{x+|x|}} \rightarrow x+|x| > 0$$

$$\begin{cases} \oplus \checkmark \\ \ominus \times \\ \ominus \times \end{cases}$$

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

(5)

هر عدد مثبتی که از 0 بزرگتر باشد و صفر نباشد که تعریف نموده است

$$\text{ب) } y = \frac{1}{\sqrt{x|x|}}$$

$$x|x| > 0$$

$$\begin{cases} \oplus \checkmark \\ \ominus \times \\ \ominus \times \end{cases}$$

$$D_f = \mathbb{R}^+$$

$$\xrightarrow[\text{نقص}]{\text{شکل}} \sqrt{-1(1-1)} = \sqrt{-1} \times$$

$$\text{الف) } y = \sqrt{2-[x]}$$

$$2-[x] \geq 0$$

$$2 \geq [x] \rightarrow [x] \leq 2$$

$$x < 3$$

$$D_f = (-\infty, 3]$$

(4)

$$\text{ب) } y = \frac{1}{\sqrt{2-[x]}}$$

$$2-[x] > 0$$

$$2 > [x] \rightarrow [x] < 2$$

$$x < 2$$

$$D_f = (-\infty, 2)$$

$$\text{الف) } y = \frac{1}{x[x]}$$

$$x[x] \neq 0$$

$$\xrightarrow{\text{if}} \begin{cases} x=0 \\ [x]=0 \end{cases}$$

$$\rightarrow 0 < x < 1$$

$$D_f = \mathbb{R} - [0, 1)$$

(1)

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$$b) y = \frac{1}{\sqrt{-u[n]}}$$

$$-u[n] > 0$$

$$\oplus \xrightarrow{\text{if } u=1} -1([1]) = -1 \quad \times$$

$$\ominus \xrightarrow{\text{if } u=-1} +1([-1]) = -1 \quad \times$$

$$\odot \xrightarrow{\text{if } u=0} \text{مخرج} = 0 \quad \times$$

$$D_f = \emptyset$$



$$a) y = \sqrt{\left[n - \frac{1}{r}\right] + \left[n + \frac{r}{r}\right]} \rightarrow \left[n - \frac{1}{r}\right] + \left[n + \frac{r}{r}\right] \geq 0 \quad (1)$$

$$\left[n + \frac{r}{r} - 1\right] + \left[n + \frac{r}{r}\right] \geq 0 \rightarrow \left[n + \frac{r}{r}\right] - 1 + \left[n + \frac{r}{r}\right] \geq 0$$

$$2\left[n + \frac{r}{r}\right] \geq 1 \rightarrow \left[n + \frac{r}{r}\right] \geq \frac{1}{r} \rightarrow n + \frac{r}{r} \geq 1 \Rightarrow n \geq \frac{1}{r}$$

$$D_f = \left[\frac{1}{r}, +\infty\right)$$



$$b) y = \sqrt{\left[n - \frac{1}{r}\right] + \left[-n + \frac{1}{r}\right]} \rightarrow \sqrt{\left[n - \frac{1}{r}\right] + \left[-\left(n + \frac{1}{r}\right)\right]}$$

$$\xrightarrow{\text{if}} \begin{cases} a \in \mathbb{Z} & [a] + [-a] = 0 \\ a \notin \mathbb{Z} & [a] + [-a] = -1 \end{cases} \Rightarrow n - \frac{1}{r} \in \mathbb{Z}$$

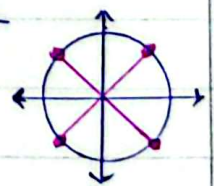
$$D_f = \left\{u \mid u = k + \frac{1}{r}, k \in \mathbb{Z}\right\}$$

$$a) y = \frac{1}{r \sin^2 u - 1}$$

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

$$\sin^2 u \neq \frac{1}{r} \rightarrow \sin u \neq \pm \frac{\sqrt{r}}{r}$$

$$D_f = \mathbb{R} - \left\{\frac{k\pi}{r} + \frac{\pi}{r}\right\}$$



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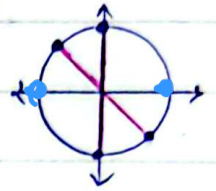
$$a) y = \frac{\cot u + 1}{\tan u + 1}$$

$$\tan u + 1 \neq 0 \rightarrow \tan u \neq -1$$

$$\tan = \frac{\sin}{\cos} \Rightarrow \cos u \neq 0$$

$$u \neq k\pi + \frac{\pi}{2}$$

$$\sin u \neq$$



$$D_f = R - \left\{ \frac{k\pi + \frac{\pi}{2}}{r}, \frac{k\pi + \frac{3\pi}{2}}{r} \right\}$$

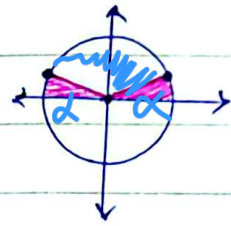
(11)

$$b) y = \sqrt{r \sin u - 1}$$

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

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

(10)



$$D_f = \left[\frac{r k\pi + \frac{\pi}{4}}{r}, \frac{r k\pi + \frac{3\pi}{4}}{r} \right]$$

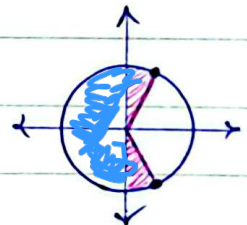
(12) ✓

$$c) y = \sqrt{1 - r \cos u}$$

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

$$1 \geq r \cos u$$

$$\frac{1}{r} \geq \cos u \rightarrow \cos u \leq \frac{1}{r}$$



$$D_f = \left[\frac{r k\pi + \frac{\pi}{r}}{r}, \frac{r k\pi + \frac{2\pi}{r}}{r} \right]$$