

الف) $\sqrt{4 - \sqrt{2-x}}$ $2-x \geq 0$ $4 - \sqrt{2-x} \geq 0$ $D_f = [1, +\infty) \cup (-\infty, 2]$
 $x \leq 2$ $\sqrt{2-x} \leq 4$
 $2-x \leq 16 \Rightarrow x \geq -14$

ب) $\sqrt{4 - \sqrt{x-2}}$ $x-2 \geq 0$ $4 - \sqrt{x-2} \geq 0$ $D_f = [2, 11]$
 $x \geq 2$ $\sqrt{x-2} \leq 4$
 $x-2 \leq 16 \Rightarrow x \leq 18$

الف) $\sqrt{4-2x^2}$ $4-2x^2 \geq 0$ $-\sqrt{2} \leq x \leq \sqrt{2}$
 $2x^2 \leq 4$
 $x^2 \leq 2 \Rightarrow x \leq \sqrt{2}$
 $x \geq -\sqrt{2}$ $D_f = [-\sqrt{2}, \sqrt{2}]$

ب) $\sqrt{3|x|-9}$ $3|x|-9 \geq 0$
 $|x| \geq 3$
 $\left. \begin{matrix} x \geq 3 \\ x \leq -3 \end{matrix} \right\} \Rightarrow D_f = [3, +\infty) \cup (-\infty, -3]$

الف) $\sqrt{\frac{|x|+1}{|x|-3}}$ $|x|-3 \neq 0$
 $|x| \neq 3 \Rightarrow x \neq \pm 3$ $D_f = \mathbb{R} - \{\pm 3\}$

ب) $\sqrt{\frac{\sqrt{x}+1}{\sqrt{x}-3}}$ $\sqrt{x}-3 \neq 0$
 $\sqrt{x} \neq 3 \Rightarrow x \neq 9$ $D_f = [0, +\infty) - \{9\}$

الف) $\frac{\sqrt{3-|x|}}{|x|+2}$ $|x|+2 \neq 0 \checkmark$ $3-|x| \geq 0$
 $|x| \leq 3$
 $-3 \leq x \leq 3$ $D_f = [-3, 3]$

ب) $y = \frac{\sqrt{4-x^2}}{|x|-1}$ $|x|-1 \neq 0$ $4-x^2 \geq 0$
 $|x| \neq 1$ $x^2 \leq 4$
 $x \neq \pm 1$ $x^2 \leq 4 \Rightarrow D_f = [-2, 2] - \{\pm 1\}$
 $-2 \leq x \leq 2$

الف) $\frac{x+1}{\sqrt{x+|x|}}$ $D_f = (0, +\infty)$ $\frac{+}{+} \neq \emptyset$ ب) $\frac{1}{\sqrt{x|x|}}$ $D_f = (0, +\infty)$ $\frac{+}{+} \neq \emptyset$ (8)

الف) $y = \sqrt{2-[x]}$ $2-[x] \geq 0$ $D_f = (3, -\infty)$ $[x] \leq 2$ (9)

ب) $y = \frac{1}{\sqrt{2-[x]}}$ $2-[x] > 0$ $D_f = (-\infty, 2)$ $[x] < 2$

الف) $\frac{1}{x[x]}$ $D_f = \mathbb{R} - \{0\}$ ب) $y = \frac{1}{\sqrt{-x[x]}}$ $D_f = \mathbb{Q}$ (10)

علامات $\frac{+}{-} \neq \emptyset$ $\frac{+}{-} \neq \emptyset$

الف) $\sqrt{[x-\frac{1}{k}] + [x+\frac{r}{k}]} =$ $[x-\frac{1}{k}] + [x+\frac{r}{k}] \geq 0$ (11)

ب) $\sqrt{[x-\frac{1}{k}][x+\frac{r}{k}]} =$ $[x+\frac{r}{k}-1] + [x+\frac{r}{k}] \geq 0$ $[x+\frac{r}{k}]-1 + [x+\frac{r}{k}] \geq 0$

$x-\frac{1}{k} \in \mathbb{Z} \Rightarrow x \in \mathbb{Z} + \frac{1}{k}$ $2[x+\frac{r}{k}] \geq 1 \Rightarrow [x+\frac{r}{k}] \geq \frac{1}{2}$

$D_f = \{x | x = k + \frac{1}{k}, k \in \mathbb{Z}\}$ $D_f = [\frac{1}{k}, +\infty)$ $\Leftrightarrow x + \frac{r}{k} \geq 1 \Rightarrow x \geq \frac{1}{k}$

الف) $y = \frac{1}{r \sin^2 x - 1}$ $r \sin^2 x - 1 \neq 0$ $\sin x \neq \pm \frac{1}{\sqrt{r}} \Rightarrow \frac{x\sqrt{r}}{\sqrt{r}} = \pm \frac{\sqrt{r}}{r}$ (12)

$D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{\sqrt{r}}\}$

ب) $\frac{\sin \phi + 1}{\cos \phi + 1}$ $\tan \phi = -1$ $D_f = \mathbb{R} - \{k\pi + \frac{\pi}{4}, k\pi - \frac{\pi}{4}\}$

$\cos \phi \neq 0$

الف) $y = \sqrt{r \sin x - 1}$ $r \sin x - 1 \geq 0$ $r \sin x \geq 1$ (13)

$\sin x \geq \frac{1}{r}$ $D_f = (k\pi, k\pi + \pi)$

ب) $y = \sqrt{1 - r \cos x}$ $1 - r \cos x \geq 0$ $\cos x \leq \frac{1}{r}$ (14)

$D_f = [k\pi - \pi, k\pi]$