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الف)  $y = \sqrt{4 - \sqrt{2-x}}$   $\sqrt{2-x} > 0 \rightarrow 2-x > 0 \rightarrow x < 2 \rightarrow -14 \leq x$   
 $2-x > 0 \rightarrow x < 2$   
 $x > -14$   $\rightarrow [-14, 2] = D_f$

✓

ب)  $\sqrt{3 - \sqrt{x-2}}$   $3 - \sqrt{x-2} > 0 \rightarrow 3 > \sqrt{x-2} \rightarrow x-2 \leq 9 \rightarrow x \leq 11$   
 $x-2 > 0 \rightarrow x > 2 \cap x \leq 11 = [2, 11] = D_f$

الف)  $y = \sqrt{4 - 2x^2}$   $4 - 2x^2 > 0 \rightarrow 2 > x^2 \rightarrow -\sqrt{2} \leq x \leq \sqrt{2} \rightarrow D_f = [-\sqrt{2}, \sqrt{2}]$

✓

ب)  $y = \sqrt{3|x|-9}$   $3|x|-9 > 0 \rightarrow 3|x| > 9 \rightarrow |x| > 3 \rightarrow x > 3 \text{ or } x < -3 \rightarrow D_f = (3, +\infty) \cup (-\infty, -3)$

✓

الف)  $y = \sqrt{\frac{|x|+1}{|x|-3}}$   $\frac{|x|+1}{|x|-3} > 0 \rightarrow |x|-3 > 0 \rightarrow |x| > 3 \rightarrow x > 3 \text{ or } x < -3 \rightarrow D_f = (3, +\infty) \cup (-\infty, -3)$

✓

ب)  $y = \sqrt{\frac{\sqrt{x}+1}{\sqrt{x}-3}}$   $\frac{\sqrt{x}+1}{\sqrt{x}-3} > 0 \rightarrow \sqrt{x}-3 > 0 \rightarrow \sqrt{x} > 3 \rightarrow x > 9 \rightarrow D_f = (9, +\infty) - \{9\}$

الف)  $y = \sqrt{3 - |x|}$   $3 - |x| > 0 \rightarrow 3 > |x| \rightarrow -3 \leq x \leq 3 \rightarrow D_f = [-3, 3]$

✓

ب)  $y = \sqrt{4 - x^2}$   $4 - x^2 > 0 \rightarrow -2 \leq x \leq 2$   
 $|x| - 1 \rightarrow |x| \neq 1 \rightarrow x \neq 1, -1$   
 $D_f = [-2, 2] - \{1, -1\}$

الف)  $y = \frac{x+1}{\sqrt{x+|x|}}$   $x+|x| > 0 \rightarrow |x| > -x \rightarrow D_f = \mathbb{R}^+ \cup (0, +\infty)$

✓

ب)  $y = \frac{1}{\sqrt{x/|x|}}$   $x/|x| > 0 \rightarrow x > 0 \rightarrow D_f = \mathbb{R}^+ \cup (0, +\infty)$



مسألة 1

الف)  $y = \sqrt{r - [x]} \rightarrow r - [x] > 0 \rightarrow r > [x] \rightarrow x < r = (-\infty, r) = D_f$

✓

ب)  $y = \frac{1}{\sqrt{r - [x]}}$   $\left. \begin{array}{l} r - [x] > 0 \\ r > [x] \end{array} \right\} x < r \rightarrow D_f = (-\infty, r)$

الف)  $y = \frac{1}{x[x]} \rightarrow x[x] \neq 0 \rightarrow \begin{array}{l} \odot X \\ \ominus \checkmark \\ \oplus \checkmark \end{array} \Rightarrow D_f = \mathbb{R} - \{0\}$   
 $\mathbb{R} - [0, 1)$

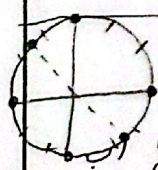
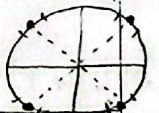
ب)  $y = \frac{1}{\sqrt{-x[x]}}$   $\left. \begin{array}{l} -x[x] > 0 \\ \odot X \\ \oplus X \\ -X \end{array} \right\} D_f = \emptyset$

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الف)  $y = \sqrt{[x - \frac{1}{r}] + [x + \frac{r}{r}]} \rightarrow [x - \frac{1}{r}] + [x + \frac{r}{r}] > 0 \rightarrow [x + \frac{r}{r} - 1] + [x + \frac{r}{r}] > 0$   
 $[x + \frac{r}{r}] - 1 + [x + \frac{r}{r}] > 0 \rightarrow 2[x + \frac{r}{r}] > 1 \Rightarrow [x + \frac{r}{r}] > \frac{1}{2} \Rightarrow x + \frac{r}{r} > 1 \Rightarrow D_f = x > \frac{1}{r}$

ب)  $y = \sqrt{[x - \frac{1}{r}] + [-x + \frac{1}{r}]}$   $\left. \begin{array}{l} a \in \mathbb{Z} [a] + [-a] = 0 \\ a \notin \mathbb{Z} [a] + [-a] = -1 \end{array} \right\} \begin{array}{l} x \in \frac{\mathbb{Z} + 1}{r} \\ x - \frac{1}{r} \in \mathbb{Z} \end{array}$   
 $D_f = \{x \mid x = k + \frac{1}{r}, k \in \mathbb{Z}\}$

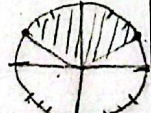
الف)  $y = \frac{1}{r \sin^2 x - 1}$   $\left. \begin{array}{l} r \sin^2 x - 1 > 0 \\ r \sin^2 x > 1 \\ \sin^2 x > \frac{1}{r} \\ \sin x > \pm \sqrt{\frac{1}{r}} \end{array} \right\} D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{r}\}$



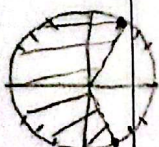
ب)  $y = \frac{\cos x}{\sin x + 1}$   $\left. \begin{array}{l} \frac{\cos x}{\sin x + 1} \neq 0 \rightarrow x \neq \pi, 2\pi \\ \tan x + 1 \neq 0 \rightarrow x \neq \frac{3\pi}{4}, \frac{7\pi}{4} \\ \cos x \neq 0 \rightarrow x \neq \frac{\pi}{2}, \frac{3\pi}{2} \end{array} \right\} D_f = \mathbb{R} - \{k\pi, k\pi + \frac{\pi}{r}, k\pi - \frac{\pi}{r}\}$

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الف)  $y = \sqrt{r \sin x - 1} \rightarrow r \sin x > 1 \rightarrow \sin x > \frac{1}{r}$   
 $D_f = [2k\pi + \frac{\pi}{4}, 2k\pi + \frac{3\pi}{4}]$



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



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