

برای حل تجزیه <<میانگین>> (ک) <مجموعه> A

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

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

$I \cap II = -14 \leq x \leq 2 \rightarrow D_f = [-14, 2]$

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

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

$I \cap II = 2 \leq x \leq 11 \rightarrow D_f = [2, 11]$

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

(ب) $y = \sqrt{3|x|-9}$ $\rightarrow 3|x|-9 = 0$ $\rightarrow x = \pm 3$

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

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

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

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

(ب) $y = \frac{\sqrt{4-x^2}}{|x|-1}$ $\rightarrow |x|-1 \neq 0 \rightarrow |x| \neq 1 \rightarrow x \neq \pm 1$

$4-x^2 \geq 0 \rightarrow x^2 \leq 4 \rightarrow -2 \leq x \leq 2$

$\textcircled{1} \cap \textcircled{2} \rightarrow D_f = [-2, 2] - \{\pm 1\}$

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

$$ب) y = \frac{1}{\sqrt{x|x|}} \quad x|x| > 0 \Rightarrow \begin{cases} x > 0 & \checkmark \\ x = 0 & \times \\ x < 0 & \times \end{cases}$$

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

$$الف) y = \sqrt{2 - [x]} \rightarrow 2 - [x] \geq 0 \rightarrow [x] \leq 2 \rightarrow x < 3 \quad (\checkmark)$$

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

$$ب) y = \frac{1}{\sqrt{2 - [x]}} \rightarrow 2 - [x] > 0 \rightarrow [x] < 2 \rightarrow x < 2$$

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

$$الف) y = \frac{1}{x[x]} \rightarrow x[x] \neq 0 \rightarrow x \neq [0, 1) \quad \checkmark$$

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

$$ب) y = \frac{1}{\sqrt{x[x]}} \rightarrow -x[x] > 0 \rightarrow x[x] < 0 \rightarrow$$

$$D_f = [1, +\infty) \quad x, [x] \text{ هذان هما حالتان، } x[x] \text{ هاتان حالتان حتى}$$

$$الف) y = \sqrt{\left[x - \frac{1}{3}\right] + \left[x + \frac{2}{3}\right]} \rightarrow \left[x - \frac{1}{3}\right] + \left[x + \frac{2}{3}\right] \geq 0 \quad (\checkmark)$$

$$\left[x - \frac{1}{3}\right] + \left[x + \frac{2}{3}\right] + 1 - 1 \geq 0 \rightarrow \left[x + \frac{2}{3}\right] + \left[x + \frac{2}{3}\right] - 1 \geq 0 \rightarrow$$

$$2\left[x + \frac{2}{3}\right] \geq 1 \rightarrow \left[x + \frac{2}{3}\right] \geq \frac{1}{2} \rightarrow \left[x + \frac{2}{3}\right] \geq 1 \rightarrow$$

$$x + \frac{2}{3} \geq 1 \rightarrow x \geq 1 - \frac{2}{3} \rightarrow x \geq \frac{1}{3} \rightarrow D_f = \left[\frac{1}{3}, +\infty\right)$$

$$ب) y = \sqrt{\left[x - \frac{1}{3}\right] + \left[-x + \frac{1}{3}\right]} \rightarrow x - \frac{1}{3} = m \quad \text{تغيير المتغير}$$

$$\begin{aligned} [m] + [-m] &\geq 0 \rightarrow \begin{cases} m \in \mathbb{Z}: [m] + [-m] = 0 & \checkmark \\ m \notin \mathbb{Z}: [m] + [-m] = -1 & \times \end{cases} \end{aligned}$$

$$\rightarrow x - \frac{1}{3} \in \mathbb{Z} \rightarrow x \in \mathbb{Z} + \frac{1}{3} \rightarrow D_f = \left\{x \mid x = k + \frac{1}{3}, k \in \mathbb{Z}\right\}$$

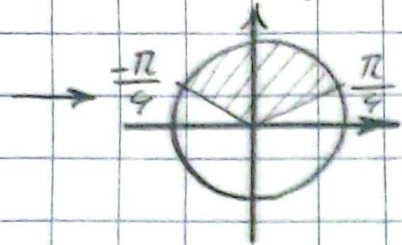
$$الف) y = \frac{1}{2\sin^2 x - 1} \rightarrow 2\sin^2 x - 1 \neq 0 \rightarrow \sin^2 x \neq \frac{1}{2} \quad (\checkmark)$$

$$D_f = \mathbb{R} \setminus \left\{2k\pi \pm \frac{\pi}{4}\right\} \quad \sin x = \pm \frac{\sqrt{2}}{2}$$

$$ب) y = \frac{\cot x + 1}{\tan x + 1} \rightarrow \begin{aligned} &\left. \begin{aligned} &x + \frac{k\pi}{2} \quad \text{(I)} \\ &\tan x + 1 \rightarrow x + \left\{k\pi - \frac{\pi}{4}\right\} \quad \text{(II)} \end{aligned} \right\} \rightarrow \text{I} \cap \text{II} \rightarrow \end{aligned}$$

$$D_f = \mathbb{R} \setminus \left\{\frac{k\pi}{2}, k\pi - \frac{\pi}{4}\right\}$$

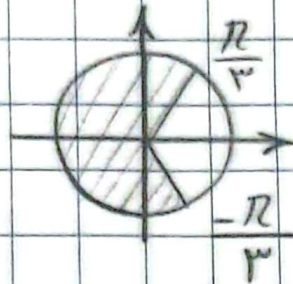
الف) $y = \sqrt{r \sin x - 1} \rightarrow r \sin x - 1 \geq 0 \rightarrow \sin x \geq \frac{1}{r} \quad (1)$



$$D_f = \left[2k\pi + \frac{\pi}{4}, 2k\pi + \frac{3\pi}{4} \right]$$

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

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



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