

الف) $y = \sqrt{4 - \sqrt{4 - x}}$ $\rightarrow \begin{cases} 4 - x \geq 0 \rightarrow x \leq 4 \\ 4 - \sqrt{4 - x} \geq 0 \rightarrow \sqrt{4 - x} \leq 4 \rightarrow 4 - x \leq 16 \rightarrow x \geq -12 \end{cases} \xrightarrow{\text{استدلال}} D_f = [-12, 4]$ -1

ب) $y = \sqrt{3 - \sqrt{x - 2}}$ $\rightarrow \begin{cases} x - 2 \geq 0 \rightarrow x \geq 2 \\ 3 - \sqrt{x - 2} \geq 0 \rightarrow \sqrt{x - 2} \leq 3 \rightarrow x - 2 \leq 9 \rightarrow x \leq 11 \end{cases} \xrightarrow{\text{استدلال}} D_f = [2, 11]$

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

ب) $y = \sqrt{3|x| - 9} \rightarrow 3|x| - 9 \geq 0 \rightarrow 3|x| \geq 9 \rightarrow |x| \geq 3 \rightarrow \begin{cases} x \geq 3 \\ x \leq -3 \end{cases} \rightarrow D_f = (-\infty, -3] \cup [3, +\infty)$

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

ب) $y = \sqrt[3]{\frac{\sqrt{x} + 1}{\sqrt{x} - 3}}$ $\rightarrow \begin{cases} x \geq 0 \\ \sqrt{x} \neq 3 \rightarrow x \neq 9 \end{cases} \rightarrow D_f = [0, +\infty) - \{9\}$

الف) $y = \frac{\sqrt{3 - |x|}}{|x| + 2}$ $\rightarrow \begin{cases} 3 - |x| \geq 0 \rightarrow |x| \leq 3 \rightarrow -3 \leq x \leq 3 \\ |x| \neq 2 \rightarrow \text{ممنوع} \end{cases} \xrightarrow{\text{استدلال}} D_f = [-3, 3]$ -4

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

الف) $y = \frac{x + 1}{\sqrt{x + |x|}}$ $\rightarrow x + |x| > 0 \rightarrow |x| > -x \rightarrow \begin{matrix} \oplus \checkmark \\ \ominus \times \\ \odot \times \end{matrix} \rightarrow D_f = (0, +\infty), \mathbb{R}^+$ -5

ب) $y = \frac{1}{\sqrt{x|x|}}$ $\rightarrow x|x| > 0 \rightarrow \begin{matrix} \oplus \checkmark \\ \ominus \times \\ \odot \times \end{matrix} \rightarrow D_f = (0, +\infty), \mathbb{R}^+$ -6

الف) $y = \sqrt{2 - [x]}$ $\rightarrow 2 - [x] \geq 0 \rightarrow 2 \geq [x] \rightarrow [x] \leq 2 \rightarrow D_f = (-\infty, 3)$ -7

ب) $y = \frac{1}{\sqrt{2 - [x]}}$ $\rightarrow 2 - [x] > 0 \rightarrow [x] < 2 \rightarrow D_f = (-\infty, 2)$ -8

الف) $y = \frac{1}{x[x]} \rightarrow x[x] \neq 0 \rightarrow \begin{cases} x \neq 0 \\ [x] \neq 0 \rightarrow x \neq (0, 1) \end{cases} \xrightarrow{\text{نشارة}} D_f = (-\infty, 0) \cup (1, +\infty)^V$

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

هذه مسألة مختلفة تماماً من المسألة السابقة

1, 1, 5

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

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

1, 1, 5

ب) $y = \sqrt{\left[x - \frac{1}{3}\right] + \left[-x + \frac{1}{3}\right]} \Rightarrow \sqrt{\left[x - \frac{1}{3}\right] + \left[-\left(x - \frac{1}{3}\right)\right]} \rightarrow \left[x - \frac{1}{3}\right] + \left[-\left(x - \frac{1}{3}\right)\right] \geq 0$

$\Rightarrow [a] + [-a] = 0 \rightarrow a \in \mathbb{Z} \Rightarrow x - \frac{1}{3} \in \mathbb{Z} \Rightarrow D_f = \left\{x \mid x = k + \frac{1}{3}, k \in \mathbb{Z}\right\}$

الف) $y = \frac{1}{\sqrt{\sin^2 x - 1}} \rightarrow \sqrt{\sin^2 x - 1} \neq 0 \rightarrow \sin^2 x \neq 1 \rightarrow \sin x \neq \pm 1$

$\rightarrow \sin x \neq \pm \frac{\sqrt{2}}{2} \rightarrow D_f = \mathbb{R} - \left\{\frac{k\pi}{2} + \frac{\pi}{4}, \frac{k\pi}{2} - \frac{\pi}{4}\right\}$

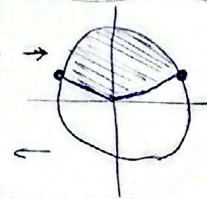
1, 1, 5

ب) $y = \frac{\cot x + 1}{\tan x + 1} \rightarrow \begin{cases} \sin x \neq 0 \rightarrow x \neq k\pi \\ \tan x + 1 \neq 0 \rightarrow \tan x \neq -1 \rightarrow x \neq \frac{k\pi}{2} - \frac{\pi}{4} \end{cases} \rightarrow D_f = \mathbb{R} - \left\{\frac{k\pi}{2}, \frac{k\pi}{2} - \frac{\pi}{4}\right\}$

$\xrightarrow{\text{بما}} \sin x \neq 0 \rightarrow x \neq k\pi$

الف) $y = \sqrt{\sin x - 1} \rightarrow \sin x - 1 \geq 0 \rightarrow \sin x \geq 1 \rightarrow \sin x \geq \frac{1}{2} \rightarrow$

$D_f = \left[2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}\right]$



1, 1, 5

ب) $y = \sqrt{1 - \cos x} \rightarrow 1 - \cos x \geq 0 \rightarrow \cos x \leq 1 \rightarrow \cos x \leq \frac{1}{2} \rightarrow$

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

