

الف)

$$2-x > 0 \rightarrow x < 2 \quad (I)$$

$$I \cup II = [-14, 2]$$

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

ب)

$$x-2 > 0 \rightarrow x > 2 \quad (I)$$

$$I \cup II = [2, 11]$$

$$3-\sqrt{x-2} > 0 \rightarrow 3 > \sqrt{x-2} \rightarrow 9 > x-2 \rightarrow x < 11 \quad (II)$$

الف)

$$4-2x^2 > 0 \rightarrow 2x^2 < 4 \rightarrow x^2 < 2 \rightarrow -\sqrt{2} < x < \sqrt{2} \rightarrow [-\sqrt{2}, \sqrt{2}]$$

ب)

$$3|x|-9 > 0 \rightarrow 3|x| > 9 \rightarrow |x| > 3 \rightarrow \begin{matrix} x > 3 \\ x < -3 \end{matrix} \rightarrow (-\infty, -3] \cup [3, +\infty)$$

الف)

$$|x|-3 \neq 0 \rightarrow |x| \neq 3 \rightarrow x \neq \pm 3 \quad D_f = \mathbb{R} - \{\pm 3\}$$

ب)

$$\sqrt{x}-3 \neq 0 \rightarrow \sqrt{x} \neq 3 \rightarrow x \neq 9 \quad D_f = \mathbb{R} - \{9\}$$

$$\sqrt{x} \rightarrow x \geq 0 \rightarrow D_f = [0, +\infty) - \{9\}$$

الف)

$$2-|x| > 0 \rightarrow |x| < 2 \rightarrow -2 < x < 2$$

$$D_f = [-2, 2]$$

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

ب)

$$4-x^2 > 0 \rightarrow x^2 < 4 \rightarrow -2 < x < 2$$

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

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

الف)

$$x+|x| > 0 \rightarrow \begin{matrix} + & \checkmark \\ 0 & x \\ - & x \end{matrix} \rightarrow (0, +\infty)$$

ب)

$$\sqrt{x}|x| > 0 \rightarrow \begin{matrix} + & \checkmark \\ 0 & x \\ - & x \end{matrix} \rightarrow (0, +\infty)$$

الف) $2 - [x] > 0 \rightarrow [x] < 2 \rightarrow x < 3$ $D_f = (-\infty, 3)$

ب) $2 - [x] > 0 \rightarrow [x] < 2 \rightarrow x < 3$ $D_f = (-\infty, 3)$

الف) $\frac{x[x]}{0} \neq 0$ $D_f = \mathbb{R} - [0, 1)$

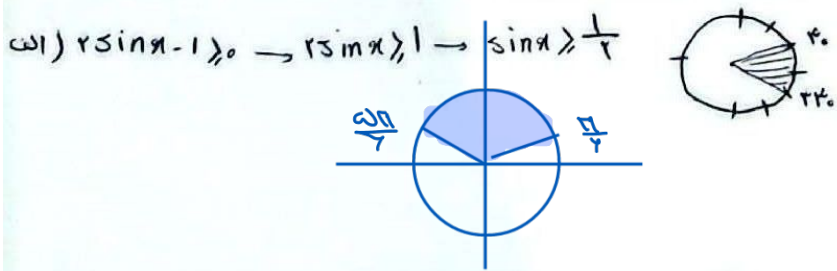
ب) $\frac{x[x]}{0} > 0$ $D_f = \emptyset$

الف) $[x - \frac{1}{x}] + [x + \frac{1}{x}] > 0 \rightarrow [x + \frac{1}{x} - 1] + [x + \frac{1}{x}] > 0 \rightarrow [x + \frac{1}{x}] - 1 + [x + \frac{1}{x}] > 0$
 $\rightarrow 2[x + \frac{1}{x}] > 1 \rightarrow [x + \frac{1}{x}] > \frac{1}{2} \rightarrow x + \frac{1}{x} > 1 \rightarrow x > \frac{1}{x}$ $D_f = [\frac{1}{x}, +\infty)$

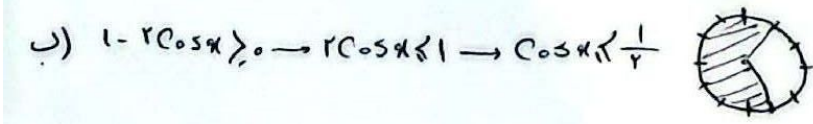
ب) $[x - \frac{1}{x}] + [-x + \frac{1}{x}] > 0 \rightarrow \begin{cases} x - \frac{1}{x} \in \mathbb{Z} \\ x - \frac{1}{x} \notin \mathbb{Z} \end{cases} \rightarrow x - \frac{1}{x} \in \mathbb{Z}$
 $\hookrightarrow D_f = \{x \mid x = k + \frac{1}{x}, k \in \mathbb{Z}\}$

الف) $2 \sin^2 x - 1 \neq 0 \rightarrow 2 \sin^2 x \neq 1 \rightarrow \sin^2 x \neq \frac{1}{2} \rightarrow \sin x \neq \pm \frac{1}{\sqrt{2}} \rightarrow \sin x \neq \frac{\sqrt{2}}{2} \rightarrow \frac{\pi}{4}, \frac{3\pi}{4}$
 $D_f = \mathbb{R} - \{k\pi + \frac{\pi}{4}, k\pi + \frac{3\pi}{4}\}$

ب) $\frac{\cos x}{\sin x} + 1 \neq 0 \rightarrow \frac{\sin x}{\cos x} + 1 \neq 0 \rightarrow \frac{\sin x}{\cos x} \neq -1 \rightarrow \frac{\sin x}{\cos x} \neq -1 \rightarrow \frac{\pi}{2}, \frac{3\pi}{2}$
 $D_f = \mathbb{R} - \{k\pi, k\pi - \frac{\pi}{2}\}$
 $\cot, \tan$ بالترتيب



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



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