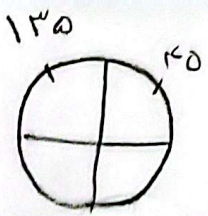


الف) $y = \frac{1}{\sqrt{\sin^2 x - 1}}$

ب) $\frac{\cot x + 1}{\tan x + 1} = \frac{\frac{\cos x}{\sin x} + 1}{\frac{\sin x}{\cos x} + 1}$
 $\cos x \neq 0 \rightarrow \sin x \neq 0$

$\sqrt{\sin^2 x - 1} \neq 0 \rightarrow \sqrt{\sin^2 x} \neq 1 \rightarrow \sin^2 x \neq \frac{1}{4} \rightarrow \sin x \neq \pm \frac{1}{2}$
 $R = \{x \mid x \neq \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}\}$



$\tan x + 1 \neq 0 \rightarrow \tan x \neq -1$

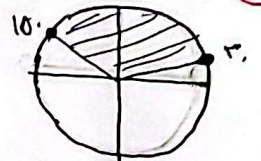
$DF = R - \{\frac{3\pi}{4}, \frac{7\pi}{4}\}$



الف) $y = \sqrt{2\sin x - 1}$

$2\sin x - 1 \geq 0 \rightarrow 2\sin x \geq 1 \rightarrow \sin x \geq \frac{1}{2}$

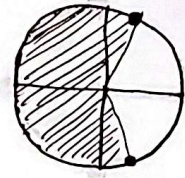
$DF = [\frac{\pi}{6}, \frac{5\pi}{6}]$



ب) $y = \sqrt{1 - 2\cos x}$

$1 - 2\cos x \geq 0 \rightarrow 1 \geq 2\cos x \rightarrow \frac{1}{2} \geq \cos x$

$DF = R - \{\frac{\pi}{3}, \frac{5\pi}{3}\}$



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الف) $y = \sqrt{4-x^2}$ $4-x^2 \geq 0 \rightarrow x^2 \leq 4 \rightarrow x \in [-2, 2]$ $Df = [-2, 2]$ ①
 ب) $y = \sqrt{3-\sqrt{x-2}}$ $3-\sqrt{x-2} \geq 0 \rightarrow \sqrt{x-2} \leq 3 \rightarrow x-2 \leq 9 \rightarrow x \leq 11$ $Df = [2, 11]$ ②

الف) $y = \sqrt{4-2x^2}$ $4-2x^2 \geq 0 \rightarrow x^2 \leq 2 \rightarrow x \in [-\sqrt{2}, \sqrt{2}]$ $Df = [-\sqrt{2}, \sqrt{2}]$ ③
 ب) $y = \sqrt{3|x|-9}$ $3|x|-9 \geq 0 \rightarrow |x| \geq 3 \rightarrow x \in (-\infty, -3] \cup [3, +\infty)$ $Df = (-\infty, -3] \cup [3, +\infty)$ ④

الف) $y = \sqrt[3]{\frac{|x|+1}{|x|-3}}$ $|x| \neq 3 \rightarrow x \neq \pm 3$ $Df = \mathbb{R} - \{\pm 3\}$ ⑤
 ب) $y = \sqrt[3]{\frac{\sqrt{x}+1}{\sqrt{x}-3}}$ $\sqrt{x} \neq 3 \rightarrow x \neq 9$ $Df = [0, +\infty) - \{9\}$ ⑥

الف) $y = \frac{\sqrt{3-|x|}}{|x|+2}$ $3-|x| \geq 0 \rightarrow |x| \leq 3 \rightarrow x \in [-3, 3]$ $Df = [-3, 3]$ ⑦
 ب) $y = \frac{\sqrt{4-x^2}}{|x|-1}$ $4-x^2 \geq 0 \rightarrow x^2 \leq 4 \rightarrow x \in [-2, 2]$ $Df = [-2, 2] - \{\pm 1\}$ ⑧

الف) $y = \frac{x+1}{\sqrt{x+|x|}}$ $x+|x| \geq 0 \rightarrow x \geq 0 \rightarrow Df = \mathbb{R}^+$ ⑨
 ب) $y = \frac{1}{\sqrt{x|x|}}$ $x|x| > 0 \rightarrow x > 0 \rightarrow Df = \mathbb{R}^+$ ⑩

الف) $y = \sqrt{2-[x]}$ $2-[x] \geq 0 \rightarrow [x] \leq 2 \rightarrow Df = (-\infty, 2)$ ⑪
 ب) $y = \frac{1}{\sqrt{2-[x]}}$ $2-[x] > 0 \rightarrow [x] < 2 \rightarrow Df = (-\infty, 2)$ ⑫

الف) $y = \frac{1}{x[x]}$ $x[x] \neq 0 \rightarrow Df = [0, +\infty)$ ⑬
 ب) $y = \frac{1}{\sqrt{-x[x]}}$ $-x[x] > 0 \rightarrow [x] > x \rightarrow \emptyset$ ⑭

الف) $y = \sqrt{[x-\frac{1}{x}]+[x+\frac{1}{x}]}$ $[x-\frac{1}{x}]+[x+\frac{1}{x}] \geq 0 \rightarrow Df$ ⑮
 ب) $y = \sqrt{[x-\frac{1}{x}]+[-(x-\frac{1}{x})]}$ $[x-\frac{1}{x}]+[-(x-\frac{1}{x})] \geq 0 \rightarrow Df = \{x \mid x = k + \frac{1}{k}, k \in \mathbb{Z}\}$ ⑯