

الف) $y = \sqrt{\frac{x^2 - 4x}{x^3 - x}} \Rightarrow \frac{x^2 - 4x}{x^3 - x} \geq 0 \Rightarrow \frac{x(x-4)}{x(x^2-1)} \geq 0$ (النسبة المئوية)
 $\frac{-1}{-} \frac{1}{+} \frac{4}{+} \frac{1}{+} \frac{0}{+}$ $\left(\frac{1}{x} \right) \cup (4, +\infty) = Df$
 ب) $y = \sqrt{\frac{x^5 - x^3}{x^3 - x}} \Rightarrow \frac{x^5 - x^3}{x^3 - x} \geq 0 \Rightarrow \frac{x^3(x^2-1)}{x(x^2-1)} \geq 0$
 $\frac{-1}{+} \frac{1}{+} \frac{1}{+} \frac{0}{+}$ $\left(\frac{1}{x} \right) \cup (4, +\infty) = Df$

الف) $y = \frac{x+1}{\sqrt{x+1|x|}}$
 $x+1|x| \geq 0$
 $\begin{matrix} + & + & + & + \\ x & - & + & + \\ + & + & + & + \end{matrix}$
 $Df = \mathbb{R}^+ \cup (0, +\infty)$

ب) $y = \frac{1}{\sqrt{x|x|}}$
 $x|x| \geq 0$
 $\begin{matrix} + & + & + & + \\ x & - & + & + \\ + & + & + & + \end{matrix}$
 $Df = \mathbb{R}^+ \cup (0, +\infty)$

الف) $y = \sqrt{2 - [x]} \Rightarrow 2 - [x] \geq 0$
 $2 \geq [x] \Rightarrow (-\infty, 3) = Df$

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

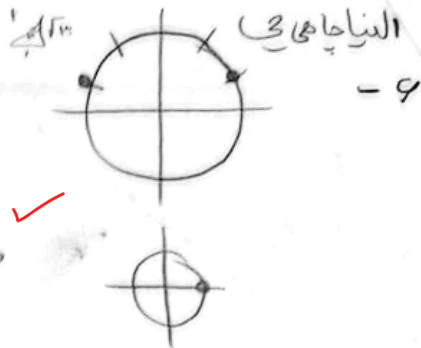
الف) $y = \sqrt{\left[x - \frac{1}{p}\right] + \left[x + \frac{p}{p}\right]} \Rightarrow \sqrt{\left[x + \frac{p}{p} - 1\right] + \left[x + \frac{p}{p}\right]} \Rightarrow \sqrt{\left[x + \frac{p}{p}\right] - 1 + \left[x + \frac{p}{p}\right]}$
 $2\left[x + \frac{p}{p}\right] - 1 \geq 0 \Rightarrow 2\left[x + \frac{p}{p}\right] \geq 1 \rightarrow \left[x + \frac{p}{p}\right] \geq \frac{1}{2} \Rightarrow x + \frac{p}{p} \geq \frac{1}{2}$
 $\left[x \geq \frac{1}{p}\right] \Rightarrow \left[\frac{1}{p}, +\infty\right)$

ب) $y = \sqrt{\left[x - \frac{1}{p}\right] + \left[-x + \frac{1}{p}\right]} \Rightarrow \left[x - \frac{1}{p}\right] + \left[-x + \frac{1}{p}\right] \geq 0$
 $\left[x - \frac{1}{p}\right] + \left[-\left(x - \frac{1}{p}\right)\right] \geq 0$
 $x - \frac{1}{p} \in \mathbb{Z} \Rightarrow Df = \left\{x \mid x \in k + \frac{1}{p}, k \in \mathbb{Z}\right\}$

الف) $y = \frac{2}{\sin x - 1} \Rightarrow \frac{2}{\sin x - 1} \neq 0$
 $Df = \mathbb{R} - \left\{k\pi + \frac{\pi}{2}\right\}$
 $\sin x = [-1, 1]$

ب) $y = \frac{3}{2\sin^2 x - 1}$
 $2\sin^2 x - 1 \neq 0$
 $2\sin^2 x \neq 1$
 $\sin^2 x \neq \frac{1}{2}$
 $\sin x \neq \pm \frac{1}{\sqrt{2}}$
 $\Rightarrow \left(-\frac{\pi}{4}, \frac{\pi}{4}\right) \cup \left(\frac{3\pi}{4}, \frac{5\pi}{4}\right)$

$g = \sqrt{y \sin x - 1}$ $y \sin x - 1 \geq 0$
 $y \sin x \geq 1$
 $D_f = \left[\frac{\pi}{2} + 2k\pi, \frac{\pi}{2} + 2(k+1)\pi \right]$
 $g = \sqrt{\cos x - 1}$ $\cos x - 1 \geq 0$
 $\cos x \geq 1$
 $D_f = \{2k\pi\}$



الف) $\cos y = |x| - 1$ $-1 \leq |x| - 1 \leq 1$
 $[2, 4] \cup [-4, -2]$ $2 \leq |x| \leq 4$

ب) $g = \arcsin(x^2 + 3x + 1)$ $-1 \leq x^2 + 3x + 1 \leq 1$
 $D_g = [-2, 2] \cup [-6, 0]$
 $D_g = [-2, 2] \cup [-6, 0]$

الف) $g = \sqrt{2 - \log_p(x-2)}$ $x-2 > 0$
 $D_f = (2, 11]$ $2 - \log_p(x-2) \geq 0$
 $2 \geq \log_p(x-2)$
 $9 \geq x-2$
 $11 \geq x$

ب) $g = \log(x^3 - x)$ $x^3 - x > 0$
 $(-\infty, -1) \cup (0, 1) \cup (1, \infty)$
 $D_f = (-\infty, -1) \cup (0, 1) \cup (1, \infty)$

الف) $g = \frac{3}{4x+1}$ $4x+1 \neq 0$ $D_f = \mathbb{R}$
 $4x \neq -1$

ب) $g = \frac{3}{4x-1}$ $4x-1 \neq 0$ $D_f = \mathbb{R} - \left\{ \frac{1}{4} \right\}$

ج) $g = \frac{3}{4x-2}$ $4x-2 \neq 0 \rightarrow 4x \neq 2$ $D_f = \mathbb{R} - \left\{ \frac{1}{2} \right\}$

د) $g = \frac{3}{4x-3}$ $4x-3 \neq 0 \rightarrow 4x \neq 3$ $D_f = \mathbb{R} - \left\{ \frac{3}{4} \right\}$

هـ) $g = (4x+1)!$ $4x+1 \in \mathbb{W}$ $D_f = \left\{ x \mid x = \frac{k-1}{4}, k \in \mathbb{W} \right\}$
 $4x \in \mathbb{W} - 1$

و) $g = \left(\frac{4x-2}{4x-5} \right)!$ $\frac{4x-2}{4x-5} \in \mathbb{W} \Rightarrow 4x-2 \in 4x\mathbb{W} - 5\mathbb{W}$
 $4x-2 \in 4\mathbb{W} - 5\mathbb{W}$
 $x = \frac{4\mathbb{W} - 5\mathbb{W} + 2}{4}$

$\left\{ x \mid x = \frac{4k-5k+2}{4}, k \in \mathbb{W} \right\}$