

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

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

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

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

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

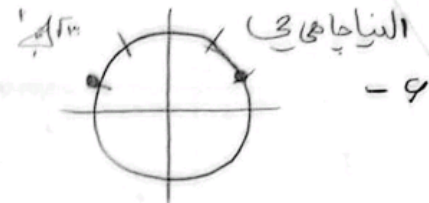
الف) $y = \sqrt{[x - \frac{1}{p}] + [x + \frac{p}{p}]} \Rightarrow \sqrt{[x + \frac{p}{p} - 1] + [x + \frac{p}{p}]} \Rightarrow \sqrt{[x + \frac{p}{p}] - 1 + [x + \frac{p}{p}]}$
 $2[x + \frac{p}{p}] - 1 \geq 0 \Rightarrow 2[x + \frac{p}{p}] \geq 1 \rightarrow [x + \frac{p}{p}] \geq \frac{1}{2} \Rightarrow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

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

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

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

$g = \sqrt{y \sin x - 1}$ $y \sin x - 1 \geq 0$
 $y \sin x \geq 1$
 $D_f = \left[\frac{\pi}{2} + 2k\pi, \frac{\pi}{2} + 2(k+1)\pi \right] \cap \left[\frac{\pi}{2}, \frac{3\pi}{2} \right]$



$g = \sqrt{\cos x - 1}$ $\cos x - 1 \geq 0$
 $\cos x \geq 1$
 $D_f = \{2k\pi\}$



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

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

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

ب) $g = \log(x^3 - x)$ $\Rightarrow x^3 - x > 0$
 $(-\infty, -1) \cup (0, 1)$ $x(x^2 - 1) > 0$
 $D_f = (-\infty, -1) \cup (0, 1)$

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

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

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

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