

۱) الف) $y = \sqrt{\frac{x^2 - 4x}{x^2 - x}} \rightarrow \frac{x^2 - 4x}{x^2 - x} \geq 0 \rightarrow \frac{x(x-4)}{x(x-1)} \geq 0 \rightarrow x \in (-\infty, 0) \cup (4, \infty)$
 ب) $y = \sqrt{\frac{x^2 - 4x}{x^2 - x}} \rightarrow \frac{x^2 - 4x}{x^2 - x} \geq 0 \rightarrow \frac{x(x-4)}{x(x-1)} \geq 0 \rightarrow x \in (-\infty, 0) \cup (4, \infty)$

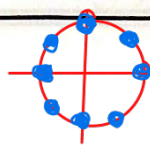
۲) الف) $y = \frac{x+1}{\sqrt{x+|x|}} \rightarrow x+1 \geq 0 \rightarrow x \geq -1$
 ب) $y = \frac{1}{\sqrt{x+|x|}} \rightarrow x+1 \geq 0 \rightarrow x \geq -1$

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

۴) الف) $y = \sqrt{\left[x - \frac{1}{x}\right] + \left[x + \frac{2}{x}\right]} \rightarrow \left[x - \frac{1}{x}\right] + \left[x + \frac{2}{x}\right] \geq 0$
 ب) $y = \sqrt{\left[x - \frac{1}{x}\right] + \left[-x + \frac{1}{x}\right]} \rightarrow \left[x - \frac{1}{x}\right] + \left[-x + \frac{1}{x}\right] \geq 0$

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

$\{k\pi \pm \frac{\pi}{4}\}$



$\frac{k\pi}{4}$ متناهی

ا) $y = \sqrt{r \sin \alpha - 1} \rightarrow r \sin \alpha - 1 \geq 0 \rightarrow r \sin \alpha \geq 1 \rightarrow \sin \alpha \geq \frac{1}{r}$

 $DF = [r\pi + \frac{\pi}{2}, r\pi + \frac{3\pi}{2}]$

ب) $y = \sqrt{\cos \alpha - 1} \rightarrow \cos \alpha - 1 \geq 0 \rightarrow \cos \alpha \geq 1 \rightarrow \cos \alpha = 1$
 $DF = \{r\pi\}$

ا) $\cos y = |x| - r \rightarrow -1 \leq |x| - r \leq 1 \rightarrow r \leq |x| \leq r+1$
 $r \leq x \leq r+1, -r-1 \leq x \leq -r, DF = [r, r+1] \cup [-r-1, -r]$
 ب) $y = \arcsin(x^r + r x + 1), -1 \leq x^r + r x + 1 \leq 1$
 $x^r + r x \leq 0 \rightarrow x(x+r) \rightarrow x = -r, x = 0$
 $DF = [-r, 0] \cup [0, r]$

ا) $y = \sqrt{r - \log_p(x-r)}$ $r - \log_p(x-r) \geq 0 \rightarrow \log_p(x-r) \leq r$
 $DF = (r, 11]$
 ب) $y = \log_p(x-r)$ $x-r \leq p \rightarrow x \leq r+p$
 $DF = (-1, 0) \cup (1, +\infty)$

ا) $y = \frac{r}{x^r + 1} \rightarrow x^r + 1 \neq 0 \rightarrow x^r \neq -1$
 $DF = \mathbb{R}$
 ب) $y = \frac{r}{x^r - 1} \rightarrow x^r - 1 \neq 0 \rightarrow x^r \neq 1 \rightarrow x \neq 1$
 $DF = \mathbb{R} - \{1\}$
 ج) $y = \frac{r}{x^r - 1}, x^r - 1 \neq 0$
 $DF = \mathbb{R} - \{\frac{1}{r}\}$

ا) $y = (x+1)!$ $x+1 \in \mathbb{N} \rightarrow x \in \frac{n-1}{r}$
 $DF = \{x | x = \frac{k-1}{r}, k \in \mathbb{N}\}$
 ب) $y = \left(\frac{r x - r}{r x - \omega}\right)!$ $\frac{r x - r}{r x - \omega} \in \mathbb{N}, \frac{r x - \omega}{r x - r} \in \mathbb{N}$
 $DF = \{x | x = \frac{\omega k - r}{r k - r}, k \in \mathbb{N}\}$