

۱)  $y = \sqrt{\frac{x^2 - 4x}{x^2 - x}} \rightarrow \frac{x^2 - 4x}{x^2 - x} \geq 0$   
 $\frac{x(x-4)}{x(x-1)} \geq 0 \rightarrow x \neq 0, x \neq 1$   
 $D_f = (-1, 0) \cup (0, 1) \cup [4, +\infty)$

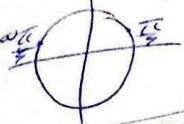
۲)  $y = \sqrt{\frac{x^2 - 4x}{x^2 - x}} \rightarrow \frac{x^2 - 4x}{x^2 - x} \geq 0$   
 $\frac{x(x-4)}{x(x-1)} \geq 0 \rightarrow x \neq 0, x \neq 1$   
 $D_f = \mathbb{R} - \{-1, 0, 1\}$

۳)  $y = \frac{x+1}{\sqrt{x+|x|}} \rightarrow x+1 \geq 0 \rightarrow x \geq -1$   
 $D_f = (-1, +\infty)$

۴)  $y = \sqrt{2 - [x]} \rightarrow 2 - [x] \geq 0 \rightarrow [x] \leq 2 \rightarrow x \in (-\infty, 3)$   
 $D_f = (-\infty, 3)$

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

۶)  $y = \frac{2}{\sin x - 1} \rightarrow \sin x - 1 \neq 0 \rightarrow \sin x \neq 1 \rightarrow x \neq \frac{\pi}{2} + 2k\pi$   
 $D_f = \mathbb{R} - \{\frac{\pi}{2} + 2k\pi\}$

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)  $y = \arcsin(x^r + r^{r+1}), -1 \leq x^r + r^{r+1} \leq 1$   
 $x^r + r^{r+1} \leq 0 \rightarrow x^r \leq -r^{r+1} \rightarrow x \leq -r, x \geq 0$   
 $x^r + r^{r+1} \geq 0 \rightarrow x^r \geq -r^{r+1} \rightarrow x \geq -r, x \leq 0$   
 $DF = [-r, 0] \cup [0, r]$

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)  $y = \log_p(x-r), x-r \leq p \rightarrow x \leq p+r$   
 $x^r - r > 0 \rightarrow x(x^{r-1} - 1) > 0$   
 $DF = (-1, 0) \cup (1, +\infty)$

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

ا)  $y = (x+1)! \rightarrow x+1 \in \mathbb{N} \rightarrow x \in \frac{n-1}{2}$   
 $DF = \{x | x = \frac{k-1}{2}, k \in \mathbb{N}\}$

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