

الف) $r \sin x - 1 \geq 0 \rightarrow r \sin x \geq 1 \rightarrow \sin x \geq \frac{1}{r} \rightarrow \frac{\pi}{9} \leq \sin x \leq \frac{2\pi}{9}$
 $\rightarrow D_f = \left[r_k \pi + \frac{\pi}{9}, r_k \pi + \frac{2\pi}{9} \right]$

ب) $\cos x - 1 \geq 0 \rightarrow \cos x \geq 1 \xrightarrow{-1 \leq \cos x \leq 1} \cos x = 1$
 $\rightarrow D_f = \{ r_k \pi \}$

$-1 \leq |x| - r \leq 1 \xrightarrow{+r} r \leq |x| \leq r+1 \rightarrow r \leq x \leq r+1$
 $\rightarrow D_f = [-r, -r] \cup [r, r+1]$

$-1 \leq x^2 + r x + 1 \leq 1 \rightarrow x^2 + r x \leq 0 \rightarrow x(x+r) \leq 0$
 $x^2 + r x + 1 \geq 0 \rightarrow (x+r)(x+1) \geq 0$
 $\rightarrow D_f = (-\infty, -r] \cup [0, +\infty)$

الف) $x - r > 0 \rightarrow x > r$
 $r - \log_p(x-r) \geq 0 \rightarrow \log_p(x-r) \leq r \rightarrow x-r \leq p^r \rightarrow x \leq 11$
 $r < x \leq 11$

$D_f = (r, 11]$
 ب) $x^3 - x > 0 \rightarrow x(x^2 - 1) > 0 \rightarrow x(x-1)(x+1) > 0$
 $\rightarrow D_f = (-1, 0) \cup (1, +\infty)$

الف) $r^x + 1 \neq 0 \rightarrow r^x \neq -1 \rightarrow$ معكوفه برقرار $\rightarrow D_f = \mathbb{R}$

ب) $r^x - 1 \neq 0 \rightarrow r^x \neq 1 \rightarrow \log_r 1 \neq x = 0 \rightarrow D_f = \mathbb{R} - \{0\}$

ج) $r^x - r \neq 0 \rightarrow r^x \neq r \rightarrow x \neq \log_r r = 1 \rightarrow D_f = \mathbb{R} - \{1\}$

د) $r^x - r^2 \neq 0 \rightarrow r^x \neq r^2 \rightarrow x \neq \log_r r^2 \rightarrow D_f = \mathbb{R} - \{2 \log_r r\}$

الف) $r^x + 1 \in W \xrightarrow{-1} r^x \in W-1 \xrightarrow{\div r} x \in \frac{W-1}{r} \rightarrow$

$D_f = \left\{ x \mid x = \frac{k-1}{r}, k \in W \right\}$

ب) $\frac{r^x - r}{r^x - r^2} \in W \rightarrow x \in -\frac{-\Delta W + r}{r^x - r^2} = \frac{\Delta W - r}{r^x - r^2}$
 $\rightarrow D_f = \left\{ x \mid x = \frac{\Delta K - r}{r^k - r^2}, k \in W \right\}$