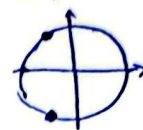


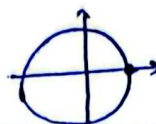
الف) $2\cos x + 1 \neq 0 \Rightarrow 2\cos x \neq -1 \Rightarrow \cos x \neq -\frac{1}{2} \Rightarrow$

$$D_f = \mathbb{R} - \left\{ 2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3} \right\}$$



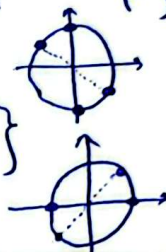
ب) $\cos x - 1 \neq 0 \Rightarrow \cos x \neq 1 \Rightarrow$

$$D_f = \mathbb{R} - \{2k\pi\}$$



الف) $\tan x + 1 \neq 0 \Rightarrow \tan x \neq -1$
 $\tan x = \frac{\sin x}{\cos x} \Rightarrow \cos x \neq 0$

ب) $\cot x - 1 \neq 0 \Rightarrow \cot x \neq 1$
 $\cot x = \frac{\cos x}{\sin x} \Rightarrow \sin x \neq 0$



الف) $-1 \leq \sin y \leq 1 \Rightarrow -1 \leq x^2 - 2 \leq 1 \Rightarrow 1 \leq x^2 \leq 3 \Rightarrow \begin{cases} 1 \leq x \leq \sqrt{3} \\ -1 \geq x \geq -\sqrt{3} \end{cases}$
 $\Rightarrow D_f = [1, \sqrt{3}] \cup [-\sqrt{3}, -1]$

ب) $-1 \leq \sqrt{x} - 2 \leq 1 \Rightarrow 2 \leq \sqrt{x} \leq 4 \Rightarrow 4 \leq x \leq 16 \Rightarrow D_f = [4, 16]$

الف) $-1 \leq \cos y \leq 1 \Rightarrow -1 \leq |x| - 3 \leq 1 \Rightarrow 2 \leq |x| \leq 4 \Rightarrow \begin{cases} 2 \leq x \leq 4 \\ -2 \geq x \geq -4 \end{cases}$
 $\Rightarrow D_f = [2, 4] \cup [-4, -2]$

ب) $-1 \leq x^2 + 3x + 1 \leq 1 \Rightarrow \begin{cases} x^2 + 3x + 1 \geq -1 \Rightarrow x^2 + 3x + 2 \geq 0 \Rightarrow (x+1)(x+2) \geq 0 \text{ (I)} \\ x^2 + 3x + 1 \leq 1 \Rightarrow x^2 + 3x \leq 0 \Rightarrow x(x+3) \leq 0 \text{ (II)} \end{cases} \Rightarrow$
 $\text{I: } \frac{x}{x+3} \geq \frac{-1}{-1+3} \quad \text{II: } \frac{x}{x+3} \leq \frac{1}{1+3} \Rightarrow D_f = \text{I} \cap \text{II} \Rightarrow D_f = [-3, 2] \cup [-2, 1]$

الف) $x^2 - 2 > 0 \Rightarrow x^2 > 2 \Rightarrow \begin{cases} x > \sqrt{2} \\ x < -\sqrt{2} \end{cases} \Rightarrow D_f = (-\infty, -\sqrt{2}) \cup (\sqrt{2}, +\infty)$

ب) $2 - |x| > 0 \Rightarrow |x| < 2 \Rightarrow -2 < x < 2 \Rightarrow D_f = (-2, 2)$

الف) $\left. \begin{array}{l} \omega - x > 0 \\ x - r > 0 \\ x - r \neq 1 \end{array} \right\} \Rightarrow \left\{ \begin{array}{l} x < \omega \\ x > r \\ x \neq r \end{array} \right. \Rightarrow D_f = (r, \omega) - \{r\}$ ب) $\left. \begin{array}{l} x^2 - 1 > 0 \\ x + r > 0 \\ x + r \neq 1 \end{array} \right\} \Rightarrow \left\{ \begin{array}{l} x > 1 \\ x < -1 \\ x > -r \\ x \neq -r \end{array} \right. \Rightarrow D_f = (-r, -r) \cup (-r, -1) \cup (1, +\infty)$	٦
الف) $\frac{x^2 - 4x + 3}{x - r} > 0$. $x^2 - 4x + 3 = 0 \Rightarrow (x-1)(x-3) = 0 \Rightarrow \begin{matrix} x=1 \\ x=3 \end{matrix}$ $x - r \neq 0 \Rightarrow x \neq r$ $\frac{x}{-1 \quad + \quad + \quad +} =$ ب) $\left. \begin{array}{l} \frac{x+r}{x-r} > 0 \\ x+\omega > 0 \\ x+\omega \neq 1 \end{array} \right\} \Rightarrow \left\{ \begin{array}{l} x > -\omega \\ x \neq -r \end{array} \right. \Rightarrow D_f = (-\omega, -r) \cup (-r, -r) \cup (r, +\infty)$	٧
الف) $\left\{ \begin{array}{l} r - \log_r(x-r) \geq 0 \Rightarrow \log_r(x-r) \leq r \Rightarrow x-r \leq 1 \Rightarrow x \leq 1 \quad \textcircled{I} \\ x-r > 0 \Rightarrow x > r \quad \textcircled{II} \end{array} \right. \Rightarrow \textcircled{I} \text{ و } \textcircled{II} \Rightarrow D_f = (r, 1]$ ب) $\left\{ \begin{array}{l} r \log_r^n - 1 > 0 \Rightarrow r \log_r^n > 1 \Rightarrow \log_r^n > \frac{1}{r} \Rightarrow x > r^{\frac{1}{r}} \Rightarrow x > \sqrt[r]{r} \\ x > 0 \end{array} \right\} \Rightarrow D_f = (\sqrt[r]{r}, +\infty)$	٨
الف) $r^n + 1 \neq 0 \Rightarrow r^n \neq -1 \Rightarrow D_f = \mathbb{R} - \log_r^{-1}$ ب) $r^n - 1 \neq 0 \Rightarrow r^n \neq 1 \Rightarrow D_f = \mathbb{R} - \log_r 1$ ج) $r^n - r \neq 0 \Rightarrow r^n \neq r \Rightarrow D_f = \mathbb{R} - \log_r r$ د) $r^n - r^2 \neq 0 \Rightarrow r^n \neq r^2 \Rightarrow D_f = \mathbb{R} - \log_r r^2$	٩
الف) $rn+1 \in W \Rightarrow rn \in W-1 \Rightarrow n \in \frac{W-1}{r} \Rightarrow D_f = \{n n = \frac{K-1}{r}, K \in W\}$ ب) $\frac{rn-r}{rn-\omega} \in W \Rightarrow rn-r = rWn - \omega W \Rightarrow rn-r = rWn - \omega W \Rightarrow n(r-rW) = r-\omega W \Rightarrow n = \frac{r-\omega W}{r-rW} \Rightarrow D_f = \{n n = \frac{r-\omega K}{r-rK}, K \in W\}$	١٠