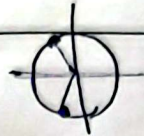
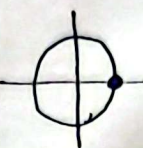
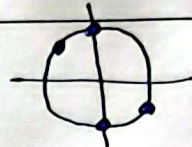
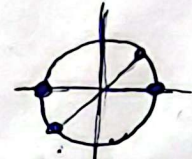


الف) $2\cos x + 1 \neq 0 \Rightarrow 2\cos x \neq -1 \Rightarrow \cos x \neq -\frac{1}{2}$  $R - \left\{ 2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3} \right\}$

ب) $\cos x - 1 \neq 0 \Rightarrow \cos x \neq 1 \Rightarrow$  $R - \{2k\pi\}$

الف) $\tan x + 1 \neq 0 \Rightarrow \tan x \neq -1$
 $\cos x \neq 0 \Rightarrow$  $R - \left\{ k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right\}$

ب) $\cot x - 1 \neq 0 \Rightarrow \cot x \neq 1 \Rightarrow$  $R - \left\{ k\pi, k\pi + \frac{\pi}{4} \right\}$
 $\sin x \neq 0$

الف) $-1 \leq x^2 - 2 \leq 1 \xrightarrow{+2} 1 \leq x^2 \leq 3 \Rightarrow \begin{cases} 1 \leq x \leq \sqrt{3} \\ -1 \geq x \geq -\sqrt{3} \end{cases}$

ب) $x \geq 0$
 $-1 \leq \sqrt{x} - 3 \leq 1 \xrightarrow{+3} 2 \leq \sqrt{x} \leq 4 \Rightarrow 4 \leq x \leq 16$ $\cap \Rightarrow Df = [4, 16]$

الف) $-1 \leq |x| - 2 \leq 1 \xrightarrow{+2} 2 \leq |x| \leq 3 \Rightarrow \begin{cases} 2 \leq x \leq 3 \\ -3 \leq x \leq -2 \end{cases}$

ب) $-1 \leq x^2 + 3x + 1 \leq 1$
 $\begin{cases} x^2 + 3x \leq 0 \Rightarrow x(x+3) \leq 0 \Rightarrow x \in [-3, 0] \\ 0 \leq x^2 + 3x + 2 \Rightarrow (x+1)(x+2) \geq 0 \Rightarrow x \in (-\infty, -2] \cup [-1, \infty) \end{cases}$
 $\Rightarrow Df = [-3, -2] \cup [-1, 0]$

الف) $x^2 - 4 > 0 \Rightarrow x^2 > 4 \Rightarrow x > 2 \vee x < -2$
 $\Rightarrow Df = (-\infty, -2) \cup (2, \infty)$

ب) $2 - |x| > 0 \Rightarrow 2 > |x| \Rightarrow 2 > x > -2 \text{ or } (-2, 2)$

الف) $\omega - x > 0 \Rightarrow x < \omega$
 $x - f > 0 \Rightarrow x > f$
 $x \neq f \Rightarrow Df = (f, \omega) - \{f\}$

ب) $x^f - 1 > 0 \Rightarrow x^f > 1 \Rightarrow x > 1 \text{ و } x < -1 \Rightarrow$ ~~$x < -1$~~ $Df = (-f, -1) \cup (1, \infty) - \{-f\}$
 $x + f > 0 \Rightarrow x > -f$
 $x \neq -f$

الف) $\frac{x^f - fx + f^2}{x - f} > 0 \Rightarrow \frac{(x-1)(x-f)}{x-f}$ $x < f$ $\frac{f}{f-f} - 1 + \frac{f}{f-f} = (1, f) \cup (f, \infty)$

ب) $\frac{x+f}{x-f} > 0$ $x < \frac{-f}{f}$ $\frac{f}{f-f} + \frac{f}{f-f} = (-\infty, -f) \cup (f, \infty) \Rightarrow Df = (-\infty, -f) \cup (f, \infty) - \{-\infty\}$
 $x \neq -\infty$

الف) $x - f > 0 \Rightarrow x > f$ $f = \log_r x^{x-f} > 1 \Rightarrow \log_r x^{x-f} \leq f \Rightarrow x - f \leq 1 \Rightarrow x \leq 1 + f$
 $\hookrightarrow Df = [f, 1 + f]$

ب) $(x > 0) \Rightarrow r \log_r x - 1 > 0 \Rightarrow r \log_r x > 1 \Rightarrow \log_r x > \frac{1}{r} \Rightarrow x > \sqrt[r]{r}$
 $Df = x > \sqrt[r]{r} \Rightarrow (\sqrt[r]{r}, \infty)$

الف) $f^x \neq -1 \Rightarrow Df = \mathbb{R}$

ب) $f^x \neq +1 \Rightarrow x \neq 0 \Rightarrow Df = \mathbb{R} - \{0\}$

ج) $f^x \neq f \Rightarrow x \neq \log_f f \Rightarrow Df = \mathbb{R} - \log_f f$

د) $f^x \neq f^2 \Rightarrow x \neq \log_f f^2 \Rightarrow Df = \mathbb{R} - \log_f f^2$

الف) $f_{x+1} \in W \Rightarrow x = \frac{w-1}{f} \Rightarrow \{x \mid \frac{k-1}{f}, k \in W\}$

ب) $\frac{f^x - f}{f^x - 1} \in W \Rightarrow r^x w - \omega w = f^x - 1 \Rightarrow r^x w - f^x = \omega w - f$
 $x(rw - f) = \omega w - f$
 $\hookrightarrow x = \frac{\omega w - f}{rw - f}$