

الف) $\frac{x+3}{x^3-2x^2+3x-1} = \frac{x+3}{(x-1)(x^2+2x-1)} = \frac{(x+3)}{(x-1)(x^2+2x-1)} = \frac{x+3}{(x-1)(x+4)(x-1)}$ ب) $\frac{x+3}{x^3-2x^2+3x-1} = \frac{x+3}{(x-1)(x^2+2x-1)} = \frac{x+3}{(x-1)(x+4)(x-1)}$ ج) $\frac{x+3}{x^3-2x^2+3x-1} = \frac{x+3}{(x-1)(x^2+2x-1)} = \frac{x+3}{(x-1)(x+4)(x-1)}$	الف) $D_f = 1R - \left\{ -\frac{1}{4}, -\frac{1}{2}, -\frac{3}{4} \right\}$ ب) $D_f = 1R - \left\{ -\frac{1}{4}, -\frac{1}{2}, -\frac{3}{4} \right\}$ ج) $D_f = 1R - \left\{ -\frac{1}{4}, -\frac{1}{2}, -\frac{3}{4} \right\}$
الف) $\frac{x+3}{x^3-2x^2+3x-1} = \frac{x+3}{(x-1)(x^2-2x+1)} \rightarrow D_f = 1R - \{1\}$ ب) $\frac{x+3}{x^3-2x^2+3x-1} = \frac{x+3}{(x-1)(x^2-2x+1)} \rightarrow D_f = 1R - \{1\}$	الف) $D_f = 1R - \{1\}$ ب) $D_f = 1R - \{1\}$
الف) $y = \frac{2}{x^2-5 x-1 -2x+4}$ ب) $x \geq 1 \rightarrow x^2-5x+4 \neq 0 \rightarrow (x-2)(x-1) \neq 0 \rightarrow x \neq 2, 1$ ج) $x < 1 \rightarrow x^2+3x \neq 0 \rightarrow x(x+3) \rightarrow x \neq 0, -3$ د) $D_f = 1R - \{0, -3, 2, 1\}$	الف) $y = \frac{2}{x^2-5 x-1 -2x+4}$ ب) $x \geq 1 \rightarrow x^2-5x+4 \neq 0 \rightarrow (x-2)(x-1) \neq 0 \rightarrow x \neq 2, 1$ ج) $x < 1 \rightarrow x^2+3x \neq 0 \rightarrow x(x+3) \rightarrow x \neq 0, -3$ د) $D_f = 1R - \{0, -3, 2, 1\}$
الف) $y = \sqrt{[x]-2} \rightarrow [x]-2 \geq 0 \rightarrow [x] \geq 2 \rightarrow [x] \in \{2, 3, 4, \dots\} \rightarrow D_f = (-\infty, 2]$ ب) $\frac{5x^2+4}{[x]^2-[x]-3} \Rightarrow [x]^2-2[x]-3 \neq 0 \rightarrow ([x]-3)([x]+1) \neq 0$ ج) $D_f = 1R - \{2, 3\} \cup [-1, 0) \cup (3, 4) \cup [4, 5)$	الف) $y = \sqrt{[x]-2} \rightarrow [x]-2 \geq 0 \rightarrow [x] \geq 2 \rightarrow [x] \in \{2, 3, 4, \dots\} \rightarrow D_f = (-\infty, 2]$ ب) $\frac{5x^2+4}{[x]^2-[x]-3} \Rightarrow [x]^2-2[x]-3 \neq 0 \rightarrow ([x]-3)([x]+1) \neq 0$ ج) $D_f = 1R - \{2, 3\} \cup [-1, 0) \cup (3, 4) \cup [4, 5)$
الف) $y = \sqrt{[x-\frac{1}{4}]+[x+\frac{2}{5}]} \rightarrow [x-\frac{1}{4}]+[x+\frac{2}{5}] \geq 0 \rightarrow 2[x-\frac{1}{4}] \geq -1$ ب) $D_f = [\frac{1}{4}, +\infty)$ ج) $[x-\frac{1}{4}]+[x+\frac{2}{5}] \geq 0 \rightarrow 2[x-\frac{1}{4}] \geq -1$	الف) $y = \sqrt{[x-\frac{1}{4}]+[x+\frac{2}{5}]} \rightarrow [x-\frac{1}{4}]+[x+\frac{2}{5}] \geq 0 \rightarrow 2[x-\frac{1}{4}] \geq -1$ ب) $D_f = [\frac{1}{4}, +\infty)$ ج) $[x-\frac{1}{4}]+[x+\frac{2}{5}] \geq 0 \rightarrow 2[x-\frac{1}{4}] \geq -1$

$[x-\frac{1}{4}]+[-(x-\frac{1}{4})] \geq 0$

$D_f = \{x | x = k + \frac{1}{4}, k \in \mathbb{Z}\}$



ا) $\frac{\cot x + 1}{\tan x + 1} \rightarrow \textcircled{1} \sin x \neq 0 \rightarrow x \neq k\pi \quad \textcircled{2} \tan x + 1 \neq 0 \rightarrow \tan x \neq -1 \rightarrow x \neq k\pi - \frac{\pi}{4}$
 $\textcircled{3} \cos x \neq 0 \rightarrow x \neq k\pi + \frac{\pi}{2}$

ب) $y = \sqrt{1 - \epsilon \sin^2 x} = 1 - \epsilon \sin^2 x \geq 0 \rightarrow \epsilon \sin^2 x \leq 1 \rightarrow \sin^2 x \leq \frac{1}{\epsilon}$
 $\frac{1}{\sqrt{\epsilon}} \leq \sin x \leq \frac{1}{\sqrt{\epsilon}}$



$D = [k\pi + \frac{\pi}{4}, k\pi - \frac{\pi}{4}]$

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

$D = [rk\pi + \frac{\pi}{4}, rk\pi + \frac{5\pi}{4}]$



ب) $y = \sqrt{1 - \epsilon \cos^2 x} \rightarrow 1 - \epsilon \cos^2 x \geq 0 \rightarrow \cos^2 x \leq \frac{1}{\epsilon}$

$D = [rk\pi + \frac{\pi}{4}, rk\pi + \frac{5\pi}{4}]$



ا) $\arcsin(x^r + r^{x+1}) = -1, x^r + r^{x+1} \leq 1$
 $\textcircled{1} x^r + r^{x+1} \leq 1 \rightarrow x^r + r^{x+1} \leq 0 \quad \frac{-r}{1} \leq \frac{0}{1} \rightarrow [-r, 0]$
 $\textcircled{2} x^r + r^{x+1} \leq 1 \rightarrow x^r + r^{x+1} \leq 0 \quad \frac{-r}{1} \leq \frac{0}{1} \rightarrow [-r, 0]$
 $D = [-r, -r] \cup [-1, 0]$

ب) $\cos y = \sqrt{1 - r^x}$

$\textcircled{1} x \leq \frac{1}{r} \quad \textcircled{2} 0 \leq \sqrt{1 - r^x} \leq 1 \rightarrow 0 \leq \sqrt{1 - r^x} \leq 1 \rightarrow x \leq \frac{1}{r}, x \geq r$

$D = [r, \frac{1}{r}]$

ا) $y = \log_r (1 - \log_r x)$
 $1 - \log_r x > 0 \rightarrow \log_r x < 1 \quad x < r \quad D = (0, r)$

ب) $\log_r (1 - \log_r \frac{1}{r})$

$1 - \log_r \frac{1}{r} > 0 \rightarrow \log_r \frac{1}{r} < 1 \rightarrow x > \frac{1}{r}$

$D = (\frac{1}{r}, +\infty)$

ا) $\int r^{\epsilon x - x^r} - 1 = r^{\epsilon x - x^r} - 1 \geq 0 \rightarrow r^{\epsilon x - x^r} \geq r^r$
 $\epsilon x - x^r \geq r \rightarrow x^r - \epsilon x + r \leq 0 \quad (x-r)(x-1) \leq 0 \quad D = [1, r]$

ب) $(\frac{r^x + \epsilon}{r^x + \epsilon})!$
 $\frac{r^x + \epsilon}{r^x + \epsilon} \in \mathbb{N} \rightarrow r^x + \epsilon = r^x + \epsilon$

$D = \{x \mid x = \frac{\omega - \epsilon k}{r^k - r}, k \in \mathbb{N}\}$
 $r^x + \epsilon = r^x + \epsilon$
 $x = \frac{\omega - \epsilon k}{r^k - r}$