

الف)  $\frac{x+3}{(x-1)(2x^2+5x-3)} = \frac{x+3}{(x-1)(x+3)(x-1)}$   
 $(x^2+5x-3) = (x+\frac{3}{2})(x-1)$   $\Rightarrow$   $\frac{3}{2} = -\frac{3}{2}, -\frac{3}{2}, 1, \frac{1}{2}$

$$Df = R - \{-\frac{3}{2}, 1, \frac{1}{2}\}$$

①

ب)  $\frac{x+3}{(x+1)(2x^2+7x+3)} = \frac{x+3}{(x+1)^2(x+4)}$   
 $x^2+7x+4$

$$Df = R - \{-1, -4\}$$

الف)  $\frac{x+3}{(x-1)(x^2-x+1)} = \frac{x+3}{(x-1)}$   
 $(x-1)(x^2-x+1)$   
 $x^2-x+1$

$$Df = R - \{1\}$$

②

ب)  $\frac{x+3}{(x-1)(x^2-x+1)}$   $\gamma_0$   
 $Df = (-\infty, -2] \cup (1, +\infty)$

$$\frac{-3}{+1-1} +$$

$$x^2 - 5x + 5 - 2x + 5 = x^2 - 7x + 10$$

$\frac{7}{x^2-7x+10}$   $\gamma_0$   $\Delta = 49 - 40 = 9$   
 $\frac{7 \pm \sqrt{9}}{2} = 1, -1$

③

$$x^2 + 5x + 5 - 2x + 5 = x^2 + 3x + 10$$

$\frac{3}{x^2+3x+10}$   $\gamma_0$   $\Delta = 9 - 40$   $Df = R - \{1, -1\}$   
 $\frac{3 \pm \sqrt{9-40}}{2}$

الف)  $[-x] - 2 \gamma_0 \rightarrow [-x] \gamma_1 \rightarrow -x \gamma_1 \rightarrow x \leq -2 \rightarrow (-\infty, -2]$

④

ب)  $([x] - 3) ([x] + 1) \rightarrow Df = R - [3, 4) \cup (-1, 0) \rightarrow$

$$[x] \neq 3$$

$$[x] \neq -1$$

الف)  $[x - \frac{1}{3}] + [x + \frac{1}{3}] \gamma_0 \rightarrow [x] + [x] - \frac{1}{3} + \frac{1}{3} \gamma_0$

$$2[x] + \frac{1}{3} \gamma_0 \rightarrow [x] \gamma_1 \frac{1}{3} \rightarrow [x] \gamma_1 \frac{1}{3} \rightarrow x \gamma_1 1 \rightarrow [1, +\infty)$$

ب)  $[x - \frac{1}{3}] + [\frac{1}{3} - x] \gamma_0 \rightarrow [x] - \frac{1}{3} + [-x] + \frac{1}{3} \gamma_0$

⑤

$$[x] + [-x] \gamma_0 \rightarrow Df = \mathbb{Z}$$

الف)  $\tan x + 1 \neq 0 \rightarrow \tan x \neq -1 \quad \sin x \neq 0$   
 $\tan x \neq -1 \quad R = \{k\pi, k\pi + \pi, k\pi - \frac{\pi}{2}\}$



④

ب)  $1 - 5 \sin^2 x \geq 0 \rightarrow 1 \geq 5 \sin^2 x \rightarrow \frac{1}{5} \geq \sin^2 x \rightarrow \frac{1}{\sqrt{5}} \geq |\sin x| \rightarrow \frac{1}{\sqrt{5}} \geq \sin x \geq -\frac{1}{\sqrt{5}}$

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



الف)  $2 \sin x - 1 \geq 0 \rightarrow 2 \sin x \geq 1 \rightarrow \sin x \geq \frac{1}{2}$

$DF = [k\pi + \frac{\pi}{6}, k\pi + \frac{5\pi}{6}]$



⑤

ب)  $1 - 2 \cos x \geq 0 \rightarrow 1 \geq 2 \cos x \rightarrow \frac{1}{2} \geq \cos x$

$DF = [k\pi + \frac{\pi}{3}, k\pi + \frac{5\pi}{3}]$   
 $[k\pi + \frac{\pi}{3}, k\pi + \frac{5\pi}{3}]$

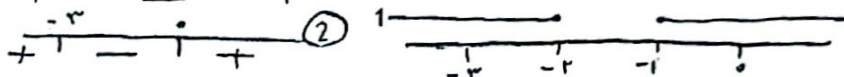


الف)

$-1 \leq x^2 + 3x + 1 \leq 1 \rightarrow -2 \leq x^2 + 3x \leq 0$

$0 \leq x^2 + 3x + 2 \rightarrow \frac{x+2}{x+1} \leq 1 \rightarrow \frac{x+2}{x+1} - 1 \leq 0 \rightarrow \frac{1}{x+1} \leq 0 \rightarrow x+1 < 0 \rightarrow x < -1$

$x^2 + 3x \leq 0 \rightarrow x(x+3) \leq 0 \rightarrow -3 \leq x \leq 0$



$[-3, -1] \cup [-1, 0]$

⑥

ب)  $\sqrt{0-2x} \leq 1 \rightarrow \sqrt{-2x} \leq 1 \rightarrow -2x \leq 1 \rightarrow -x \leq -\frac{1}{2} \rightarrow x \geq \frac{1}{2}$

$0-2x \geq 0 \rightarrow -2x \geq 0 \rightarrow x \leq 0$

الف)  $1 - \log_2 x \geq 0 \rightarrow 1 \geq \log_2 x \rightarrow x \leq 2 \rightarrow DF = (0, 2]$

⑦

ب)  $1 - \log_2 \frac{x}{2} \geq 0 \rightarrow 1 \geq \log_2 \frac{x}{2} \rightarrow \frac{x}{2} \leq 2 \rightarrow x \leq 4$   
 $x > 0$

الف)  $\frac{x^2 - x^2}{x^2 - 1} \geq 0 \rightarrow \frac{x^2 - x^2}{x^2 - 1} \geq 0 \rightarrow \frac{x^2 - x^2}{(x-1)(x+1)} \geq 0 \rightarrow \frac{x^2 - x^2}{(x-1)(x+1)} \geq 0$   
 $DF = [1, 2]$

⑧

ب)  $\frac{x^2 + a}{x^2 + b} \in \mathbb{Q} \rightarrow x = \frac{-x^2 + a}{x^2 + b} \rightarrow \frac{x^2 + a}{x^2 + b} = \frac{-x^2 + a}{x^2 + b}$