

(الف) جمع ضرایب منبج ضرورت $\rightarrow \frac{2x^3 + 3x^2 - 11x + 3}{(2x^3 - 2x^2)} \mid x-1$ (1)

$$\begin{array}{r} 2x^3 + 3x^2 - 11x + 3 \\ - (2x^3 - 2x^2) \\ \hline 5x^2 - 11x + 3 \\ - (5x^2 - 5x) \\ \hline -6x + 3 \\ - (-6x + 3) \\ \hline 0 \end{array}$$

$\rightarrow y = \frac{x+3}{(x-1)(x+3)(2x-1)}$ $D = 1, -3, \frac{1}{2}, 1$

(ب) درمضوع جمع ضرایب توانی حالتی $\rightarrow \frac{2x^3 + 9x^2 + 10x + 3}{(2x^3 + 2x^2)} \mid x+1$

$$\begin{array}{r} 2x^3 + 9x^2 + 10x + 3 \\ - (2x^3 + 2x^2) \\ \hline 7x^2 + 10x + 3 \\ - (7x^2 + 7x) \\ \hline 3x + 3 \\ - (3x + 3) \\ \hline 0 \end{array}$$

$\rightarrow y = \frac{x+3}{(2x+1)(x+3)(x+1)}$ $D = 1, -\frac{1}{2}, -1, -\frac{1}{2}$

(الف) جمع ضرایب منبج ضرورت $\rightarrow \frac{x^3 - 2x^2 + 2x - 1}{(x^3 - x^2)} \mid x-1$ (2)

$$\begin{array}{r} x^3 - 2x^2 + 2x - 1 \\ - (x^3 - x^2) \\ \hline -x^2 + 2x - 1 \\ - (-x^2 + x) \\ \hline -x - 1 \\ - (-x - 1) \\ \hline 0 \end{array}$$

$\rightarrow y = \frac{x+3}{(x-1)(x^2-x+1)}$ $D = 1, 1$

ب) $\frac{x+3}{(x-1)(x^2-x+1)} > 0$
 $\frac{x+3}{x^2-x+1} > 0$
 $\frac{x+3}{x^2-x+1} > 0$

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

$D = (-\infty, -3] \cup (1, +\infty)$

$x > 1 \rightarrow x^2 - \omega x + \omega - 2x + \omega \neq 0 \rightarrow x^2 - \omega x + 1 \neq 0$
 $(x-\omega)(x-1) \neq 0 \rightarrow x \neq \omega, x \neq 1$

$x < 1 \rightarrow x^2 + \omega x - \omega - 2x + \omega \neq 0 \rightarrow x^2 + 3x \neq 0$
 $x(x+3) \neq 0 \rightarrow x \neq 0, x \neq -3$

$D = \mathbb{R} - \{-3, 0, 1, \omega\}$

الف) $[-x] - 2 > 0 \rightarrow [-x] > 2$

$D = (-\infty, -2]$

ب) $\frac{[x]-3}{3 < x < 4} \cdot \frac{[x]+1}{-1 < x < 0} \neq 0$

$D = \mathbb{R} - ([1, 0) \cup [3, 4])$

الف) $[x - \frac{1}{3}] + [x + \frac{2}{3}] > 0$ $\rightarrow [x - \frac{1}{3} + 1] + [x + \frac{2}{3}] > 1$

$\rightarrow 2[x + \frac{2}{3}] > 1 \rightarrow [x + \frac{2}{3}] > \frac{1}{2} \rightarrow x > \frac{1}{3} \rightarrow D = [\frac{1}{3}, +\infty)$

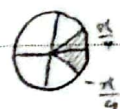
ب) $[x - \frac{1}{3}] + [\frac{1}{3} - x] > 0 \rightarrow a \in \mathbb{Z} \rightarrow x - \frac{1}{3} \in \mathbb{Z}$

$D = \{x \mid x = k + \frac{1}{3}, k \in \mathbb{Z}\}$

الف) $D = \mathbb{R} - \{k\pi, k\pi - \frac{\pi}{4}\}$



ب) $1 - \epsilon \sin^2 u > 0 \quad \sin^2 u \leq \frac{1}{\epsilon} \rightarrow -\frac{1}{\epsilon} \leq \sin u \leq \frac{1}{\epsilon}$



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

الف) $y \sin x = 1, 0 \rightarrow \sin x = \frac{1}{y} \rightarrow D = [2K\pi + \frac{\pi}{4}, 2K\pi + \frac{3\pi}{4}]$ (1)



ب) $1 - y \cos x = 0 \rightarrow \cos x = \frac{1}{y} \rightarrow D = [2K\pi - \frac{\pi}{4}, 2K\pi + \frac{\pi}{4}]$



$D = [2K\pi + \frac{\pi}{4}, 2K\pi + \frac{5\pi}{4}]$

الف) $-1 < x^2 + 3x + 1 < 1 \rightarrow x^2 + 3x < 0 \rightarrow x(x+3) < 0$ (2)

$x^2 + 3x + 4 > 0$

$(x+1)(x+4) > 0$



$\Rightarrow D = [-3, -1] \cup [-1, 0]$

ب) $\omega - 2x > 0 \rightarrow x < \frac{\omega}{2} \xrightarrow{\wedge} D = [x, \frac{\omega}{2}]$

$-1 < \sqrt{\omega - 2x} < 1 \rightarrow \omega - 2x < 1 \rightarrow x > \frac{\omega - 1}{2}$

الف) $x > 0 \rightarrow 1 - \log_x x > 0 \rightarrow \log_x x < 1 \rightarrow x < 3$ (3)

$\Rightarrow D = (0, 3)$

ب) $x > 0 \rightarrow 1 - \log_{\frac{1}{x}} x > 0 \rightarrow \log_{\frac{1}{x}} x < 1 \rightarrow x > \frac{1}{x}$

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

الف) $y^{x^2 - x^3} = 1, 0 \rightarrow y^{x^2 - x^3} > \frac{1}{y} \rightarrow x^2 - x^3 > 1$ (4)

$\rightarrow \frac{x^2 - x^3}{(x-1)(x-3)} < 0 \rightarrow \frac{1}{x-1} > \frac{3}{x-3} \rightarrow D = [1, 3]$

$$\text{ب) } \frac{\gamma K + \omega}{\gamma K + \epsilon} \in W \rightarrow u_s = \frac{\epsilon W - \omega}{\gamma W - \gamma}$$

$$\rightarrow D = \left\{ u \mid u_s = \frac{-\epsilon K + \omega}{\gamma K - \gamma}, K \in W \right\}$$