

الف) $\frac{m^3 - 10m^2 + 11m - 10}{-5m^3 + 5m^2} \mid \frac{m-1}{5m^2 - 14m + 10}$

$\frac{-14m^2 + 11m - 10}{+4m^2 - 14m}$

$\frac{10m - 10}{-10m + 10}$

$\frac{0}{0}$

ب) $\frac{m^3 - m^2 - 11m - 10}{-5m^3 - 11m - 10} \mid \frac{m+1}{m^3 - 5m - 10}$

$\frac{-5m^3 - 11m - 10}{+5m^3 + 5m}$

$\frac{-6m - 10}{+5m + 10}$

$\frac{0}{0}$

$\sum (m-1)(m-10) \Rightarrow D_f = \mathbb{R} - \left\{ \frac{10}{5}, \frac{10}{5} > 1 \right\}$

$\Rightarrow (m+1)(m^2 - 5m - 10) \neq 0$

$\Rightarrow D_f = \mathbb{R} - \left\{ -1, \frac{5 \pm \sqrt{35}}{2} \right\}$

الف) $\rightarrow I \quad m - 10 \geq 0$
 $m \geq 10$
 $\frac{10}{5} \geq m$

II $m - \sqrt{m^2 - 10} \neq 0$
 $m \neq \sqrt{m^2 - 10}$
 $m^2 \neq m^2 - 10 \rightarrow m^2 + 10 - m^2 \neq 0 \Rightarrow D_f = (-\infty, \frac{10}{5}] - \{10\}$

ب) I $m - 10 \geq 0$
 $m \geq \frac{10}{5}$

II $m - \sqrt{m^2 - 10} \neq 0$
 $m \neq \sqrt{m^2 - 10}$
 $m^2 - m^2 + 10 \neq 0 \rightarrow (m-1)(m-10) \neq 0$

$D_f = \left[\frac{10}{5}, +\infty \right) - \{10\}$

الف) $\cos m \neq \frac{1}{5} \rightarrow \cos m \neq \frac{1}{5} \rightarrow \bigcirc \rightarrow D_f = \mathbb{R} - \left\{ 2k\pi - \frac{\pi}{5}, 2k\pi + \frac{\pi}{5} \right\}$

ب) $\sin m \neq \frac{1}{5} \rightarrow \bigcirc \rightarrow D_f = \mathbb{R} - \left\{ 2k\pi + \frac{\pi}{5}, 2k\pi - \frac{\pi}{5} \right\} \rightarrow \left\{ 2k\pi + \frac{\pi}{5} \right\}$

ج) $\begin{cases} \cot m \neq 1 \\ \sin m \neq 0 \end{cases} \rightarrow \bigcirc \rightarrow D_f = \mathbb{R} - \left\{ k\pi, k\pi + \frac{\pi}{2} \right\}$

د) $\sin^2 m \neq \frac{1}{5} \rightarrow \sin m \neq \pm \frac{\sqrt{5}}{5} \rightarrow \bigcirc \rightarrow D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{5}, k\pi + \frac{4\pi}{5} \right\}$

الف) $(m-1)(m-10) > 0 \rightarrow \begin{array}{c} 10 \quad 1 \\ + \quad | \quad - \end{array} \rightarrow D_f = (-\infty, 1) \cup (10, +\infty)$

ب) $(m-1)(m-10) < 0 \rightarrow \begin{array}{c} 10 \quad 1 \\ - \quad | \quad + \end{array} \rightarrow D_f = (1, 10)$

ج) $(m+1)(m+10) \geq 0 \rightarrow \begin{array}{c} -10 \quad -1 \\ + \quad | \quad + \end{array} \rightarrow D_f = (-\infty, -10] \cup [-1, +\infty)$

د) $(m-1)(m-4) \leq 0 \rightarrow \begin{array}{c} 4 \quad 1 \\ - \quad | \quad + \end{array} \rightarrow D_f = [1, 4]$

الف) $\frac{(x-1)(x-2)}{x-1} < 0 \rightarrow \begin{array}{c|c|c|c} 1 & 2 & \omega \\ \hline + & - & + \end{array} \rightarrow D_f = (-\infty, 1) \cup (2, \omega)$

ب) $\frac{(x-1)(x+1)}{(x-1)(x-\omega)} \geq 0 \rightarrow \begin{array}{c|c|c|c} -1 & 1 & \omega \\ \hline + & - & + \end{array} \rightarrow D_f = (-\infty, -1] \cup (\omega, +\infty)$

الف) $\frac{(x-1)(x-\mu)}{x-1} \geq 0 \rightarrow \begin{array}{c|c|c} \mu \\ \hline - & + \end{array} \rightarrow D_f = [\mu, +\infty)$

ب) $(x-1)(x+1) \neq 0 \rightarrow D_f = \mathbb{R} - \{\pm 1\}$

الف) $x^2 - \mu x > 0 \rightarrow x(x-\mu) > 0 \rightarrow \begin{array}{c|c|c} 0 & \mu \\ \hline + & - & + \end{array} \rightarrow D_f = (-\infty, 0) \cup (\mu, +\infty)$

ب) (I) $4 - x^2 > 0 \rightarrow (2 > x) \rightarrow x > \mu > -x$
 (II) $|x| > 2$
 (III) $|x| \neq \mu \rightarrow x \neq \pm \mu$
 $\rightarrow D_f = (-\infty, -\mu) \cup (-\mu, -2) \cup (2, \mu) \cup (\mu, +\infty)$

ج) I $\frac{(x-\mu)(x-\varepsilon)}{x-\mu} > 0 \rightarrow x \neq \mu$
 II $1 > x$
 III $x \neq 9$
 $\rightarrow D_f = (9, 1) - \{\mu\} \cup (1, +\infty)$

$\begin{cases} x \neq 1 \\ x > 0 \\ \mu 4 - x^2 > 0 \rightarrow 2 > x > -2 \end{cases} \rightarrow \begin{array}{c|c|c} \varepsilon & \mu & \nu \\ \hline + & - & + \end{array} \rightarrow D_f = (0, 2] \cup [\nu, +\infty) - \{\mu\}$

$y = \frac{x(x-1)}{x(x+1)} \rightarrow \frac{x(x+1)}{x(x+1)} \neq 0 \rightarrow \begin{array}{c|c|c|c} -1 & 0 & 1 \\ \hline + & - & + \end{array} \rightarrow \begin{array}{c|c|c|c|c} -1 & 0 & 1 & \omega \\ \hline + & - & + & - & + \end{array}$

$\frac{x-f(x)}{f(x)} \geq 0 \rightarrow x = f(x) \rightarrow \mu, -1 = x \rightarrow \begin{array}{c|c|c|c} -1 & -1 & \mu & \omega \\ \hline + & - & + & - \end{array} \rightarrow D_f = (-\infty, -1) \cup (-1, \mu) \cup [\mu, +\infty)$

