

(40)

أولاً / ثانياً / ثالثاً / رابعاً - B - ثانياً - 3

أ) $y = \frac{x+3}{x^3+x^2-x+3} = \frac{x+3}{(x-1)(x-\frac{1}{2})(x+3)} \neq 0$
 $x^3+x^2-x+3 \rightarrow a+b+c+d=0$

$$\begin{array}{r|l} x^3+x^2-x+3 & x-1 \\ \hline -(x^3-x^2) & \\ \hline 2x^2-x+3 & \rightarrow x^2+2x-4 = (x+4)(x-1) \end{array} \left\{ \begin{array}{l} x = -\frac{4}{1} = -4 \\ x = \frac{1}{1} = 1 \end{array} \right.$$

 $\Rightarrow D_f = \{R - \{-4, 1\}\}$

ب) $y = \frac{x+3}{x^3+9x^2+10x+3} = \frac{x+3}{(x+3)(x+1)(x+\frac{1}{3})} \neq 0$

$a+c=b+d \rightarrow x=-1$

$$\begin{array}{r|l} x^3+9x^2+10x+3 & x+1 \\ \hline -(x^3+3x^2) & \\ \hline 6x^2+10x+3 & \rightarrow x^2+2x+1 = (x+1)^2 \\ \hline -(6x^2+6x) & \\ \hline 4x+3 & \rightarrow x = -\frac{3}{4} = -0.75 \\ \hline 0 & \end{array}$$

 $\Rightarrow D_f = \{R - \{-1, -0.75, -\frac{1}{3}\}\}$

أ) $y = \frac{x+3}{x^3-x^2+x-1} = \frac{x+3}{(x-1)(x^2-x+1)} \neq 0$
 $x^3-x^2+x-1 \rightarrow a+b+c+d=0$

$$\begin{array}{r|l} x^3-x^2+x-1 & x-1 \\ \hline -(x^3-x^2) & \\ \hline 0x^2+0x-1 & \rightarrow \Delta < 0 \end{array}$$

 $\Rightarrow D_f = \{R - \{1\}\}$

ب) $y = \sqrt{\frac{x+3}{x^3-x^2+x-1}} = \sqrt{\frac{x+3}{(x-1)(x^2-x+1)}} \geq 0$

$$\begin{array}{c|c|c} -3 & 1 & \\ \hline + & - & + \\ \hline 0 & 0 & 0 \end{array}$$

 $\rightarrow D_f = (-\infty, 1] \cup (1, +\infty)$

أ) $y = \frac{x}{x^2-\omega|x-1|-x+\omega} \neq 0 \rightarrow \frac{x}{x^2-x+1-\omega|x-1|+\omega} = \frac{x}{(x-1)^2}$

$(x-1)^2-\omega|x-1|+\omega \rightarrow (|x-1|-1)(|x-1|-\omega) \neq 0$
 $|x-1| \neq 1 \rightarrow x \neq 0, 2$
 $|x-1| \neq \omega \rightarrow x \neq -\omega, \omega$
 $\Rightarrow D_f = \{R - \{-\omega, 0, 1, \omega\}\}$

أ) $y = \frac{x+3}{|x+1|-|x+3|} \neq 0 \rightarrow |x+1| \neq |x+3|$
 $\left\{ \begin{array}{l} x+1 \neq x+3 \rightarrow x \neq 1 \\ x+1 \neq -(x+3) \rightarrow x \neq -2 \end{array} \right.$

$\Rightarrow D_f = \{R - \{1, -2\}\}$

ب) $y = \sqrt{\frac{|x+1|-|x+3|}{-x+2}} \geq 0 \rightarrow |x+1| \geq |x+3|$
 $\left\{ \begin{array}{l} x+1 \geq x+3 \rightarrow x \geq 2 \\ x+1 \leq -(x+3) \rightarrow x \leq -2 \end{array} \right.$

$\rightarrow D_f = \{R - (-2, 2)\}$

أ) $y = \log_2(1-\log_2^x) \rightarrow x > 0$
 $1-\log_2^x > 0 \rightarrow \log_2^x < 1 \rightarrow x < 2 \rightarrow D_f = (0, 2)$

ب) $y = \log_2(1-\log_2^{\frac{x}{2}}) \rightarrow x > 0$
 $1-\log_2^{\frac{x}{2}} > 0 \rightarrow \log_2^{\frac{x}{2}} < 1 \rightarrow \frac{x}{2} < 2 \rightarrow x < 4 \rightarrow D_f = (\frac{1}{2}, +\infty)$

$f(x) = \sqrt{\log_{\frac{1}{2}} \log_2^{(x-1)}} \rightarrow x > 1 \rightarrow x > \frac{1}{2}$
 $\rightarrow \log_2^{(x-1)} > 0 \rightarrow x-1 > 1 \rightarrow x > 2 \rightarrow x > 1$
 $\rightarrow \log_{\frac{1}{2}} \log_2^{(x-1)} > 0 \rightarrow \log_2^{(x-1)} \leq 1 \rightarrow x-1 \leq 2 \rightarrow x \leq 3$

$\Rightarrow D_f = (1, 3]$

