

الف) $y = \frac{x+3}{2x^3+3x^2-11x+3}$ $\frac{2x^3+3x^2-11x+3}{2x^3-2x^2} = \frac{x-1}{2x^2-5x-3}$
 $\frac{2x^3+3x^2-11x+3}{2x^3-2x^2} \rightarrow \frac{5x^2-11x+3}{2x^2-5x-3} \rightarrow (\alpha-1)(2\alpha^2+5\alpha-3) \Rightarrow$
 $\frac{5\alpha^2-11\alpha+3}{2\alpha^2-5\alpha-3} \rightarrow (\alpha-1)(\alpha+4)(\alpha-1) \Rightarrow \alpha=1, -\frac{4}{2}, \frac{1}{2}$
 $D_f = \mathbb{R} - [-3, \frac{1}{2}, 1]$

ب) $y = \frac{x+3}{2x^3+9x^2+10x+3}$ $\frac{-2x^3+9x^2+10x+3}{2x^3+9x^2+10x+3} = \frac{x+1}{2x^2+7x+3} \rightarrow (\alpha+1)(2\alpha^2+7\alpha+3) \Rightarrow$
 $(\alpha+1)(\alpha+4)(\alpha+1) \rightarrow \alpha=-1, -\frac{4}{2}, -\frac{1}{2}$ $D_f = [-3, -1, -\frac{1}{2}]$

الف) $y = \frac{x+3}{x^3-2x^2+2x-1}$ $\frac{x^3-2x^2+2x-1}{x-1} = x^2-x+1$ $(\alpha-1)(\alpha^2-\alpha+1) \Rightarrow$
 $D_f = \mathbb{R} - [1]$

ب) $y = \sqrt{\frac{x+3}{x^3-2x^2+2x-1}} \geq 0$ $\frac{x^3-2x^2+2x-1}{x-1} = x^2-x+1 \rightarrow (\alpha-1)(\alpha^2-\alpha+1)$
 $x+3 \geq 0 \rightarrow x \geq -3$ $x^3-2x^2+2x-1 \geq 0$ $x^2-x+1 \geq 0$ $D_f = (-\infty, -3) \cup (1, +\infty)$
 $(\alpha-1) > 0 \rightarrow x > 1$ $(\alpha-1) < 0 \rightarrow x < 1$

$y = \frac{2}{x^2-\omega|x-1|-2\alpha+\omega}$ $\rightarrow x^2-\omega x+\omega-2\alpha+\omega \neq 0$ $x^2-2\alpha x+1 \neq 0$ $x \neq 2$
 $(x-\omega)(x-2) \neq 0$ $x \neq \omega$
 $x^2+\omega x-\omega-2\alpha+\omega \neq 0$ $x^2+1 \neq 0$ $x \neq 0$
 $x(x+3) \neq 0$ $x \neq -3$
 $D_f = \mathbb{R} - [-3, 0, 2, \omega]$

الف) $y = \frac{x+3}{|2x+1|-|x+3|}$ $\rightarrow \neq 0$ $\frac{-3}{-2x-1+x+3} \neq 0$ $\frac{-1}{2x-1-x-3} \neq 0$ $\frac{-1}{2x+1-x-3} \neq 0$
 $D_f = \mathbb{R} - [-\frac{4}{3}, 2]$

ب) $y = \sqrt{|2x+1|-|x+3|} \geq 0$ $\frac{-3}{-2x-1+x+3} \geq 0$ $\frac{-1}{-2x-1-x-3} \geq 0$ $\frac{-1}{2x+1-x-3} \geq 0$
 $D_f = (-\infty, -\frac{4}{3}] \cup [2, +\infty)$

الف) $y = \log_r(1-\log_\mu x)$ $\rightarrow x > 0$ $\left\{ \begin{array}{l} 1-\log_\mu x > 0 \\ \log_\mu x < 1 \\ \log x < 3 \\ x < 3 \end{array} \right\} (0, 3)$

ب) $y = \log_r(1-\log_{\frac{1}{r}} x)$ $\rightarrow x > 0$ $\left\{ \begin{array}{l} 1-\log_{\frac{1}{r}} x > 0 \\ \log_{\frac{1}{r}} x < 1 \\ x > \frac{1}{r} \end{array} \right\} (\frac{1}{r}, +\infty)$

$f(x) = \sqrt{\log_{\omega} \log_{\omega}^{(rx-1)}}$ $\begin{cases} rx-1 > 0 & x > \frac{1}{r} \\ \log_{\omega}^{rx-1} > 0 & rx-1 > 1 \quad x > 1 \\ \log_{\omega} \log_{\omega}^{(rx-1)} \geq 0 & \log_{\omega}^{(rx-1)} \leq 1 \quad rx-1 \leq \omega \quad x \leq \frac{\omega+1}{r} \end{cases}$ $D_f = [1, \frac{\omega+1}{r}]$	6
اذا) $y = \log(rx \cos x + 1)$ $rx \cos x + 1 > 0$ $\cos x > -\frac{1}{r}$ $D_f = (2k\pi + \frac{\sqrt{r}}{r}, 2k\pi - \frac{\pi}{r})$ ب) $y = \sqrt{\log \frac{x-1}{x+1}}$ $\frac{x-1}{x+1} > 0$ $\frac{-1}{+} \frac{1}{-} \frac{1}{+}$ $D_f = (-\infty, -1)$ $\log \frac{x-1}{x+1} \geq 0$ $\frac{x-1}{x+1} \geq 1$ $\frac{[1, +\infty)}{X \text{ صحت}} \rightarrow \frac{(-\infty, -1)}{X \text{ صحت}} \checkmark$	7
$f(x) = \sqrt{(a+r)x^r + ax + b} \quad (-\infty, \frac{r}{r})$ $x \leq \frac{r}{r}$ $(a+r)x^r + ax + b \geq 0$ $a+r=0 \quad a=-r \rightarrow -rx + b \geq 0 \xrightarrow{x=r} -r + b \geq 0 \quad b \geq r$ $b = [r, +\infty)$	8
$\sqrt{x^r + rx + r - m^r} \rightarrow \Delta \leq 0 \quad (r)^2 - 4 \times 1 \times r - m^r \leq 0$ $r^2 - r \leq 0 \quad m^r - 1 \leq 0 \quad m^r \leq 1 \quad -1 \leq m \leq 1$ الحد الأدنى - الحد الأعلى $\rightarrow 1 - (-1) = 2$	9
$f(x) = \frac{\sqrt{r-x^2}}{[x] + [-x] + 1} \rightarrow r-x^2 \geq 0 \quad x^2 \leq r \quad -\sqrt{r} \leq x \leq \sqrt{r}$ $\frac{[x] + [-x] + 1 \neq 0}{\downarrow \quad \downarrow \quad \downarrow}$ $\frac{-}{X} \quad \frac{0}{\checkmark} \quad \frac{+}{X}$ $\left. \begin{matrix} -r, -1, 0, 1, r \end{matrix} \right\} \rightarrow \text{ممنوع (5)}$	10