

کلاس: دهم دخترانه A

باب در خواندن تشریحی تطیف شماره ۵ : ۵۵

نام و نام خانوادگی: زهرا دهقان

الف) $y = \frac{x+8}{5x^3 - 20x^2 + 31x - 15} \Rightarrow \begin{array}{r} 5x^3 - 20x^2 + 31x - 15 : x-1 \\ \underline{5x^3 - 5x^2 + 5x - 5} \\ 15x^2 - 15x + 10 \\ \underline{15x^2 - 15x + 15} \\ -5 \end{array}$

$(x-1)(x-10)(x-4) \leftarrow$
 $\rightarrow 1, \frac{10}{x}, \frac{4}{x}$ $D_f = \mathbb{R} - \{1, \frac{10}{x}, \frac{4}{x}\}$
 $\therefore y = \frac{x^2 - 11x - 4}{3x^2 - x^2 - 11x - 4} \Rightarrow 3x^2 - x^2 - 11x - 4 \mid x+1$
 $D_f = \mathbb{R} - \{-1, 2, -\frac{4}{3}\}$
 $\cdot 2, -\frac{4}{3}, -1 \leftarrow (x+1)(x-4)(x+2)$

$$\text{الف) } y = \frac{x+1}{x - \sqrt{3-4x}} \Rightarrow \begin{cases} \sqrt{3-4x} \geq 0 \rightarrow 3-4x \geq 0 \rightarrow \frac{3}{4} \geq \frac{4x}{4} \rightarrow \boxed{x \leq \frac{3}{4}} \\ x - \sqrt{3-4x} \neq 0 \rightarrow x^2 \neq 3-4x \rightarrow x(x+4) \neq 3 \rightarrow \boxed{x \neq 1, -3} \end{cases}$$

$$\therefore y = \frac{x+y}{x - \sqrt{3x-y}} \Rightarrow \left\{ \begin{array}{l} \sqrt{3x-y} \geq 0 \rightarrow 3x-y \geq 0 \rightarrow \frac{y}{3} \leq x \rightarrow x \geq \frac{y}{3} \\ x - \sqrt{3x-y} \neq 0 \rightarrow x^2 \neq 3x-y \rightarrow x(y-3x) \neq y \rightarrow x \neq 1, y \end{array} \right.$$

الف) $y = \frac{\sin x}{x \cos x - 1} \Rightarrow x \cos x - 1 \neq 0 \rightarrow \cos x \neq \frac{1}{x}$ $D_f = \mathbb{R} - \left\{ xk\pi + \frac{\pi}{4}, xk\pi + \frac{5\pi}{4} \right\}$ 

$$\therefore y = \frac{\cos x + 1}{x \sin x + 1} \Rightarrow x \sin x + 1 \neq 0 \Rightarrow \sin x \neq -\frac{1}{x} \quad D_f = \mathbb{R} - \left\{k\pi - \frac{\pi}{2}\right\}$$

$$c) y = \frac{\tan x + 1}{\cot x - 1} \Rightarrow \begin{cases} \cot x - 1 \neq 0 \rightarrow \cot x \neq 1 \\ \sin x \neq 0 \end{cases} \quad D_f = \mathbb{R} - \{k\pi, k\pi + \frac{\pi}{2}\}$$

2) $y = \frac{\sin x + 1}{\sin^2 x - 1} \Rightarrow \sin^2 x - 1 \neq 0 \rightarrow \sin x \neq \pm \frac{\sqrt{2}}{2}$ $D_f = \mathbb{R} - \left\{ 2k\pi + \frac{\pi}{4}, 2k\pi + \frac{3\pi}{4} \right\}$ 

$$\text{الف) } x^2 - 5x + 6 > 0 \Rightarrow (x-2)(x-3) > 0 \rightarrow \begin{array}{c} -2 \quad 3 \\ + \quad | \quad - \quad | \quad + \\ 0 \quad 0 \quad 0 \end{array} D_f = (-\infty, 2) \cup (3, +\infty)$$

$\therefore x^2 - 4x + \omega < 0 \Rightarrow (x - \omega)(x - 1) < 0 \rightarrow \frac{1}{+} \frac{\omega}{-} \frac{1}{+} \quad D_f = (1, \omega) \quad (\omega > 1)$

$$c) x^2 + 4x + \omega \geq 0 \Rightarrow (x + \omega)(x + 1) \geq 0 \rightarrow \frac{-\omega - 1}{+ \quad - \quad +} \quad D_f = (-\infty, -\omega] \cup [-1, +\infty)$$

$$c) x^2 - 4x + 4 \leq 0 \Rightarrow (x-2)(x-2) \leq 0 \rightarrow \frac{1}{+} \frac{-4}{-} \frac{4}{+} \quad D_f = [2, 2]$$

الف) $\frac{x^2 - 3x + 2}{x - \omega} < 0 \Rightarrow \frac{(x-2)(x-1)}{x-\omega} \rightarrow \begin{array}{c} 1 \quad 2 \quad \omega \\ - \quad + \quad - \\ \hline - \quad + \quad - \\ \hline \end{array} \quad D_f = (1, 2) \cup (\omega, +\infty)$

$$\therefore \frac{x^4 - 1}{x^4 - 4x + \omega} > 0 \Rightarrow x^4 - 4x + \omega \neq 0 \Rightarrow (x - \omega)(x - 1) \neq 0 \Rightarrow x \neq \omega, 1$$

$$الف) y = \sqrt{\frac{x^3 - \varepsilon x + 3}{x^3 - 1}} \Rightarrow \begin{cases} \frac{x^3 - \varepsilon x + 3}{x^3 - 1} \geq 0 \rightarrow \frac{(x-3)(x-1)}{x^3 - 1} \geq 0 \\ x^3 - 1 \neq 0 \rightarrow x \neq 1 \rightarrow x \neq -1 \end{cases}$$

$$D_f = [3, +\infty)$$

$$ب) y = \sqrt[3]{\frac{x^3 - \varepsilon x + 3}{x^3 - 1}} \Rightarrow x^3 - 1 \neq 0 \rightarrow x^3 \neq 1 \rightarrow x \neq \pm 1$$

$$D_f = \mathbb{R} - \{\pm 1\}$$

$$الف) y = \log(x^3 - 3x) \Rightarrow x^3 - 3x > 0 \rightarrow x(x-3) > 0$$

$$D_f = (-\infty, 0) \cup (3, +\infty)$$

$$ب) \log |4 - x^3| \Rightarrow \begin{cases} |4 - x^3| > 0 \rightarrow 1 > x^3 \rightarrow -1 < x < 1 \\ |x| - 2 > 0 \rightarrow |x| > 2 \rightarrow x > 2, x < -2 \\ |x| - 1 \neq 1 \rightarrow |x| \neq 2 \rightarrow x \neq \pm 2 \end{cases}$$

$$D_f = (-\infty, -2) \cup (-1, 1) \cup (2, +\infty)$$

$$ج) y = \log \frac{x^3 - \sqrt{x} + 1}{x - 3} \Rightarrow \begin{cases} 10 - x > 0 \rightarrow 10 > x \\ 10 - x \neq 1 \rightarrow 9 \neq x \\ \frac{x^3 - \sqrt{x} + 1}{x - 3} > 0 \rightarrow \frac{(x-3)(x-1)}{x-3} > 0 \end{cases}$$

$$D_f = (1, 10) - \{9\}$$

$$د) y = \sqrt{x^3 - 11x + 21} + \log \frac{\sqrt{4-x^3}}{x}$$

$$(x-3)(x-1) \neq 0 \rightarrow x \neq 1, x \neq 3$$

$$(4-x^3) > 0 \rightarrow x < \sqrt[3]{4}$$

$$x \neq 0$$

$$D_f = (-\infty, 0) \cup (0, 1) \cup (1, \sqrt[3]{4}) \cup (3, +\infty)$$

$$y = \frac{x^3 - x}{x^3 + x} \Rightarrow \frac{x(x-1)}{x(x+1)}$$

	-1	0*	1	
$x^3 - x$	+	-	-	+
$x^3 + x$	+	-	-	+

$$y = \sqrt{\frac{x-f(x)}{f(x)}} \Rightarrow \sqrt{\frac{x-3}{3}} \rightarrow \frac{x-3}{3} > 0 \rightarrow x-3 > 0 \rightarrow x > 3$$

$$D_f = [3, +\infty)$$

$$الف) f(x) + 1$$

$$ب) f(x-1)$$

$$ج) -f(x)$$

$$د) f(x+1) \in \mathbb{R}$$

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