

الف) $y = \frac{x+4}{2x^3-2x^2+3x-1}$ $\frac{x+4}{x+1}$ $x+1 \neq 0$ $x \neq -1$ $Df = R - \{-1\}$

ب) $y = \frac{x+4}{2x^3-x^2-11x-4}$ $\frac{x+4}{x+1} \rightarrow x+1 \neq 0$ $x \neq -1$ $Df = R - \{-1\}$

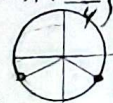
سوال ١٢

الف) $y = \frac{x+1}{x-\sqrt{14-2x}}$ $\rightarrow x^2 = 14-2x$ $x^2+2x-14=0$ $\frac{-2 \pm \sqrt{4+56}}{2} = \frac{-2 \pm \sqrt{60}}{2}$ $Df = R - \{1\}$

ب) $y = \frac{x+2}{x-\sqrt{4x-2}}$ $\rightarrow x^2 = 4x-2$ $x^2-4x+2=0$ $\Delta = 16-8=8$ $\frac{4 \pm \sqrt{8}}{2} = \frac{4 \pm 2\sqrt{2}}{2} = 2 \pm \sqrt{2}$ $Df = R - \{1, 2\}$

سوال ١٣

الف) $y = \frac{\sin x}{2\cos x - 1}$ $\rightarrow \cos x \neq \frac{1}{2}$ $Df = R - \{2k\pi + \frac{\pi}{3}, 2k\pi - \frac{\pi}{3}\}$ 

ب) $y = \frac{\cos 2x+1}{2\sin x+1}$ $\rightarrow 2\sin x+1 \neq 0$ $\rightarrow \sin x \neq -\frac{1}{2}$ $Df = R - \{2k\pi + \frac{7\pi}{6}, 2k\pi + \frac{5\pi}{6}\}$ 

ج) $y = \frac{\tan x+2}{\cot x-1}$ $\cot x \neq 1 \rightarrow k\pi + \frac{\pi}{4}$ $\sin x \neq 0 \rightarrow k\pi$ $Df = R - \{k\pi + \frac{\pi}{4}, k\pi\}$ 

د) $y = \frac{\sin x+1}{2\sin^2 x-3}$ $\rightarrow \sin^2 x \neq \frac{3}{2}$ $\rightarrow \sin x \neq \pm \frac{\sqrt{3}}{2}$ $Df = R - \{k\pi \pm \frac{\pi}{3}\}$ 

سوال ١٤

الف) $x^2-5x+4 > 0$ $(x-2)(x-4) > 0$ $\frac{1}{x-2} + \frac{1}{x-4} > 0$ $Df: (2, 4) \cup (-\infty, 2)$

ب) $x^2-4x+4 < 0$ $(x-1)(x-4) < 0$ $\frac{1}{x-1} + \frac{1}{x-4} < 0$ $Df: (1, 4)$

ج) $x^2+4x+4 \geq 0$ $(x+1)(x+4) \geq 0$ $\frac{-4}{x+1} + \frac{-1}{x+4} \geq 0$ $Df: (-\infty, -4] \cup [-1, +\infty)$

د) $x^2-7x+4 \leq 0$ $(x-1)(x-4) \leq 0$ $\frac{1}{x-1} + \frac{1}{x-4} \leq 0$ $Df: [1, 4]$

سوال ١٥

الف) $\frac{x^2-3x+2}{x-5} < 0$ $\frac{(x-1)(x-2)}{(x-5)} < 0$ $\frac{1}{x-1} + \frac{1}{x-2} - \frac{1}{x-5} < 0$ $Df: (-\infty, 1) \cup (2, 5)$

ب) $\frac{x^2-1}{x^2-4x+4} \geq 0$ $\frac{(x+1)(x-1)}{(x-1)(x-4)} \geq 0$ $\frac{-1}{x-1} + \frac{1}{x-4} \geq 0$ $Df: (-\infty, -1] \cup (4, +\infty)$

$$الف) y = \sqrt{\frac{x^2 - 4x + 3}{x^2 - 1}} \geq 0$$

$$\frac{(x-1)(x-3)}{x^2-1} \rightarrow x \neq 1$$

$$+ \quad | \quad - \quad | \quad +$$

$$Df = (-\infty, 1) \cup [3, +\infty)$$

$$ب) y = \sqrt[3]{\frac{x^2 - 4x + 3}{x^2 - 1}}$$

$$\rightarrow x^2 - 1 \neq 0 \quad x^2 \neq 1 \quad x \neq \pm 1 \quad Df = \mathbb{R} - \{\pm 1\}$$

$$الف) y = \log(x^2 - 4x)$$

$$x^2 - 4x > 0 \rightarrow x(x-4) > 0 \rightarrow$$

$$+ \quad | \quad - \quad | \quad +$$

$$Df = (-\infty, 0) \cup (4, +\infty)$$

سوال ٧

$$ب) y = \log \frac{14 - x^2}{|x| - 2}$$

$$14 - x^2 > 0 \rightarrow 14 > x^2 \rightarrow \sqrt{14} > x$$

$$Df = (-\sqrt{14}, -2) \cup (2, \sqrt{14}) - \{\pm 2\}$$

$$ج) y = \log \frac{x^2 - 4x + 12}{10 - x}$$

$$\frac{x^2 - 4x + 12}{10 - x} > 0 \rightarrow \frac{(x-2)(x-6)}{(10-x)} > 0 \rightarrow (x-6) > 0$$

$$Df = (6, 10) - \{9\}$$

$$د) y = \sqrt{x^2 - 11x + 28} + \log \frac{\sqrt{4 - x^2}}{x}$$

$$\sqrt{x^2 - 11x + 28} \geq 0 \rightarrow \frac{(x-4)(x-7)}{x} \geq 0 \rightarrow \frac{+}{+} \quad \frac{-}{-} \quad \frac{+}{+}$$

$$Df = (0, 4] - \{1\}$$

$$y = \frac{x^2 - 4}{x^2 + 4}$$

		-1	0			
x^{r-m}	+		+	0	-	0
x^{r+q}	+	0	-	0	+	+
y	+	0	-	0	-	+

$$+ \quad | \quad - \quad | \quad +$$

سوال ٨

$$y = \sqrt{\frac{x + f(x)}{f(x)}}$$

$$x - f(x) = 0 \quad x = f(x)$$

$$x = -19$$

$$f(x) = 0 \quad \begin{cases} x = 2 \\ x = -2 \end{cases}$$

$$-2 \quad -1 \quad 2 \quad 3$$

$$(-2, -1] \cup (2, 3]$$

سوال ٩