

$$f(x) = \sqrt{(a-x)x^2 + ax + b} \rightarrow \text{یک درجه} \rightarrow a=2 \quad b=-4 \quad (1)$$

$$f(x) = \sqrt{x^2 + 2x + 2 - m^2} \rightarrow \text{درجه اول باشد} \rightarrow \Delta < 0 \rightarrow f - f(2-m^2) = f(1-2+m^2) < 0 \quad (2)$$

$$(m^2-1) < 0 \quad \begin{array}{c} -1 \quad 1 \\ + \quad - \quad + \\ 0 \end{array} \quad m = 1, -1 \rightarrow 1 - (-1) = 2$$

$$f(x) = \frac{\sqrt{4-x^2}}{[x] + [-x] + 1} \quad x^2 < 4 \rightarrow -2 < x < 2 \quad (3)$$

$$[x] + [-x] \neq -1 \quad Df = \{-2, -1, 0, 1, 2\}$$

$$\text{الف) } y = \sqrt{x^3 + 2x^2} \rightarrow \sqrt{x^2(x+2)} \quad \begin{array}{c} -3 \quad 0 \\ - \quad + \quad + \end{array} \quad Df = [-3, +\infty) \quad (4)$$

$$\text{ب) } y = \sqrt{\frac{(x^2-1)(x^3-2x^2)}{x^3-1}} \rightarrow \sqrt{\frac{(x-1)(x+1)x^2(x-2)}{x^3-1}} \quad \begin{array}{c} -1 \quad 0 \quad 1 \quad 2 \\ + \quad - \quad - \quad - \quad + \end{array} \quad Df = (-\infty, -1] \cup \{0\} \cup [2, +\infty) \quad (5)$$

$$\text{الف) } y = \sqrt{|x-2| - 3} \quad |x-2| > 3 \Rightarrow x > 5, x < -1 \quad Df = (-\infty, -1] \cup [5, +\infty) \quad (6)$$

$$\text{ب) } y = \sqrt{4 - |2-x|} \quad |2-x| < 4 \Rightarrow x > -2, x < 6 \quad Df = [-2, 6] \quad (7)$$

$$\text{الف) } y = \sqrt{1-x|x|} \quad x|x| < 1 \quad \mathbb{R} \cup [0, 1] \rightarrow Df = (-\infty, 1] \quad (8)$$

$$\text{ب) } y = \frac{1}{\sqrt{3-|x-5|-1}} \quad 2-|x-5| > 0 \rightarrow |x-5| < 2 \rightarrow x < 7, x > 3 \quad Df = (3, 7) \quad (9)$$

$$\text{الف) } y = \frac{\sin^2 x - 1}{\cos x} \quad \cos x \neq 0 \quad Df = \mathbb{R} - \left\{k\pi + \frac{\pi}{2}\right\} \quad (10)$$

$$\text{ب) } \frac{\cos x}{2\cos x - 1} \quad 2\cos x \neq 1 \quad \cos x \neq \frac{1}{2} \quad \mathbb{R} - \left\{2k\pi + \frac{\pi}{3}, 2k\pi - \frac{\pi}{3}\right\}$$

الف) $y = \frac{x+3}{|2x+1| - |x+3|}$

$$|2x+1| \neq |x+3|$$

$$2x+1 \neq x+3 \rightarrow x \neq 2$$

$$2x+1 \neq -x-3 \rightarrow x \neq -\frac{4}{3}$$

$$D_f = \mathbb{R} - \left\{2, -\frac{4}{3}\right\}$$

①

ب) $y = \sqrt{|2x+1| - |x+3|}$

$$|2x+1| \geq |x+3| \rightarrow x^2 + x + 1 \geq x^2 + 4x + 9$$

$$\frac{-x}{1} \geq \frac{-8}{1}$$

$$D_f = (-\infty, -\frac{8}{3}] \cup [2, +\infty)$$

$$x^2 - 2x - 8 \geq 0 \rightarrow x^2 - 2x - 25 \geq 0 \rightarrow (x-4)(x+5) < \frac{-x}{1}$$

$$f(x) = \sqrt{\log_{\omega}^{(2x-1)}}$$

$$2x-1 > 0 \rightarrow x > \frac{1}{2}$$

②

$$\log_{\omega}^{(2x-1)} > 0$$

$$2x-1 > 1 \rightarrow x > 1$$

$$\log_{\frac{1}{\omega}}^{(2x-1)} \geq 0 \rightarrow$$

$$\rightarrow \log_{\omega}^{(2x-1)} \leq 1$$

$$\rightarrow 2x-1 \leq \omega$$

$$\rightarrow x \leq 3$$

$$D_f = (1, 3]$$

الف) $\log(2\cos x + 1)$

$$2\cos x > -1 \quad \cos x > -\frac{1}{2}$$

$$D_f = (2k\pi - \frac{2\pi}{3}, 2k\pi + \frac{2\pi}{3})$$

③

ب) $\sqrt{\log \frac{x-1}{x+1}}$

$$\frac{x-1}{x+1} > 0$$

$$\frac{-1}{+1} < \frac{1}{+1}$$

$$\log \frac{x-1}{x+1} \geq 0$$

$$\frac{x-1}{x+1} \geq 1$$

$$\frac{x-1}{x+1} - 1 \geq 0 \rightarrow$$

$$\frac{x-1-x-1}{x+1} \geq 0 \Rightarrow$$

$$\frac{-2}{x+1} \geq 0$$

$$\frac{-1}{+1} < \frac{1}{+1}$$

$$D_f = (-\infty, -1)$$