

$$D = \sqrt{(a-r)x^2 + ax + b}$$

$$\hookrightarrow a-r=0 \rightarrow a=r$$

$$\sqrt{rx+b} = \frac{-b}{r} = r \rightarrow b=-a$$

①

$$x^2 + 2x + 2 - m^2 \geq 0 \rightarrow a > 0$$

④

$$\min \rightarrow \frac{-b}{2a} \rightarrow -1$$

$$x = -1 \rightarrow 1 - 2 + 2 - m^2 \geq 0 \rightarrow m^2 \leq 1 \rightarrow -1 \leq m \leq 1$$

$$1 - (-1) = 2$$

$$\text{صورت} \rightarrow 4 - x^2 \geq 0 \rightarrow x^2 \leq 4 \rightarrow -2 \leq x \leq 2$$

$$\rightarrow -2, -1, 0, 1, 2$$

③

$$\text{مخرج} \rightarrow [x] + [-x] + 1 \neq 0 \rightarrow [x] + [-x] \neq -1 \xrightarrow{x \in \mathbb{R} - \mathbb{Z}} = -1 \rightarrow x \in \mathbb{Z}$$

$$\hookrightarrow \emptyset$$

$$\text{الف)} x^2 + 2x^2 \geq 0 \rightarrow \frac{x^2}{0} \cdot \frac{(x+2)}{-1} \geq 0 \quad \frac{-x}{-x+1} \rightarrow [-2, +\infty)$$

②

$$\text{ب)} \frac{\frac{x+1}{(x^2-1)} \cdot \frac{x+2}{(x^2-2x^2)}}{\frac{x^2-1}{1}} \geq 0 \rightarrow \frac{-1}{x+1} \cdot \frac{x+2}{-x} \geq 0 \rightarrow \mathbb{R} - (-1, 2) \cup \{0\}$$

$$\text{الف)} |x-2| - 3 \geq 0 \rightarrow |x-2| \geq 3 \rightarrow \begin{matrix} x-2 \geq 3 \rightarrow x \geq 5 \\ x-2 \leq -3 \rightarrow x \leq -1 \end{matrix} \rightarrow \mathbb{R} - (-1, 5)$$

⑤

$$\text{ب)} 4 - |2-x| \geq 0 \rightarrow |2-x| \leq 4 \rightarrow -4 \leq 2-x \leq 4 \rightarrow \begin{matrix} -4 \leq 2-x \leq 4 \\ x \leq 6 \end{matrix} \rightarrow [-2, 6]$$

$$\text{الف)} 1 - x|x| \geq 0 \rightarrow x|x| \leq 1 \rightarrow -1 \leq x|x| \leq 1 \rightarrow \begin{matrix} x = |x| \xrightarrow{x \geq 0} \frac{1}{x} \leq x^2 \leq 1 \rightarrow [0, 1] \\ x = -|x| \xrightarrow{x \leq 0} \frac{1}{x} \geq x^2 \geq 1 \rightarrow (-\infty, -1] \end{matrix}$$

⑥

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

$$\text{ب)} 4 - |x-5| - 1 \geq 0 \rightarrow |x-5| \leq 3 \rightarrow -3 \leq x-5 \leq 3 \rightarrow 2 \leq x \leq 8 \rightarrow (2, 8)$$

$$\text{الف)} \cos x \neq 0 \rightarrow \frac{\pi}{2}, \frac{3\pi}{2} \quad \mathbb{R} - \{\pi + \frac{\pi}{2}\}$$

⑦

$$\text{ب)} 2\cos x - 1 \neq 0 \rightarrow 2\cos x \neq 1 \rightarrow \cos x \neq \frac{1}{2} \rightarrow \frac{\pi}{3}, \frac{5\pi}{3} \rightarrow \mathbb{R} - \{2k\pi \pm \frac{\pi}{3}\}$$

$$\text{الف)} |2x+1| - |x+3| \neq 0 \rightarrow |2x+1| \neq |x+3| \rightarrow \begin{matrix} 2x+1 \neq x+3 \\ 2x+1 \neq -(x+3) \end{matrix} \rightarrow \begin{matrix} x \neq 2 \\ 3x \neq -4 \end{matrix} \rightarrow \begin{matrix} x \neq 2 \\ x \neq -\frac{4}{3} \end{matrix} \rightarrow \mathbb{R} - \{2, -\frac{4}{3}\}$$

⑧

$$\frac{2 \pm \sqrt{4+96}}{4} \rightarrow \frac{2 \pm 10}{4} \rightarrow \begin{matrix} x_1 = \frac{12}{4} = 3 \\ x_2 = \frac{-8}{4} = -2 \end{matrix} \rightarrow \mathbb{R} - \{3, -2\}$$

$$\text{ب)} |2x+1| - |x+3| \geq 0 \rightarrow |2x+1| \geq |x+3| \rightarrow \begin{matrix} 2x+1 \geq x+3 \\ 2x+1 \geq -(x+3) \end{matrix} \rightarrow \begin{matrix} x \geq 2 \\ 3x \geq -4 \end{matrix} \rightarrow \begin{matrix} x \geq 2 \\ x \geq -\frac{4}{3} \end{matrix} \rightarrow \frac{x}{2} \geq 2$$

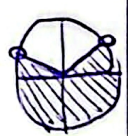
$$\frac{-\frac{4}{3}}{2} \rightarrow -\frac{2}{3} \quad \mathbb{R} - (-\frac{2}{3}, 2)$$

$$rx-1 > 0 \rightarrow x > \frac{1}{r}$$

$$\log_{\omega} r^{x-1} > 0 \rightarrow rx-1 > 1 \rightarrow rx > 2 \rightarrow x > \frac{2}{r}$$

$$\log_{\omega} r^{x-1} > 0 \rightarrow 0 < \log_{\omega} r^{x-1} < 1 \rightarrow 0 < rx-1 < 1 \rightarrow rx > 1 \rightarrow x > \frac{1}{r}$$

$$\text{الف) } r \cos x + 1 > 0 \rightarrow \cos x > -\frac{1}{r}$$



$$D_f = R - \left[r \arccos \left(-\frac{1}{r} \right), r \arccos \left(-\frac{1}{r} \right) + \frac{\sqrt{r^2 - 1}}{r} \right]$$

$$\frac{x-1}{x+1} > 0 \rightarrow \frac{-1}{3-1} \rightarrow R = [-1, 1]$$

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

$$x+1 < 0 \rightarrow x < -1$$

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