

1

B و 1

0, 1

$$1 + 1 + (-1) + 1 = 0$$

$$\rightarrow x \neq 1$$

$$2x^3 + 1x^2 - 1x + 1 = (x-1)(2x^2 + 3x - 1) = (x-1)(2x^2 + 4x - 1)$$

$$x^2 + 4x - 1 = (x+4)(x-1) \rightarrow \frac{-4}{1} = -1 \leq \frac{1}{1}$$

$$D_f = \mathbb{R} - \{1, \frac{1}{1}, -1\} \quad (1)$$

$$1 + 1 = 1 + 1$$

$$\rightarrow x \neq -1$$

$$2x^3 + 1x^2 + 1x + 1 = (x+1)(2x^2 + 1x + 1) =$$

$$x^2 + 1x + 1 = (x+1)(x+1) \rightarrow \frac{-1}{1} \leq \frac{-1}{1} = -1$$

$$D_f = \mathbb{R} - \{-1, -\frac{1}{1}, -1\}$$

$$1 - 1 + 1 + (-1) = 0 \rightarrow x = 1$$

$$x^3 - 1x^2 + 1x - 1 = (x-1)(x^2 - x + 1)$$

$$\Delta = b^2 - 4ac = 1 - 4 = -3 < 0$$

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

$$x + 1 > 0 \quad x > -1$$

$$x^3 - 1x^2 + 1x - 1 > 0$$

$$(x-1)(x^2 - x + 1) > 0$$

$$\rightarrow x = 1 \quad \begin{cases} \rightarrow \frac{1}{-1} + \\ \rightarrow (+) \end{cases}$$

$$\frac{x+1}{x^3 - 1x^2 + 1x - 1} > 0$$

$$D_f = [1, +\infty)$$

$$x^2 - 2|x-1| + 1x + 2 \neq 0$$

$$x > 0 \quad x^2 - 2x + 2 - 1x + 2 = x^2 - 3x + 4 = (x-2)(x-2) = 0$$

$$x < 0 \quad x^2 + 2x - 2 + (-1x) + 2 = x^2 + 1x = x(x+1) = 0$$

$$D_f = \mathbb{R} - \{-1, 0, 2, 2\}$$

$$[-x] - 1 > 0$$

$$[-x] > 1$$

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

$$[x]^2 - 1[x] - 1 \neq 0$$

$$[x] = t$$

$$t^2 - 1t - 1 \neq 0$$

$$(t-2)(t+1) \neq 0$$

$$(-1)$$

$$t+1 \quad t \neq -1$$

$$[x] \neq 2$$

$$[x] \neq -1$$

$$D_f = \mathbb{R} - (-1, -1] \cup [2, +\infty)$$

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

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

$$1[x] > -\frac{1}{x}$$

$$[x] = -\frac{1}{x}$$

$$x \in (-1, -1]$$

$$[x] = -1$$

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

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

$$[x] + [-x] > 0$$

$$\begin{cases} 0 & x \in \mathbb{Z} \\ -1 & x \notin \mathbb{Z} \end{cases}$$

$$D_f = \mathbb{Z}$$

$$\frac{\cos x + 1}{\sin x} + 1$$

$$\sin x \neq 0$$



$$\cos x \neq 0$$



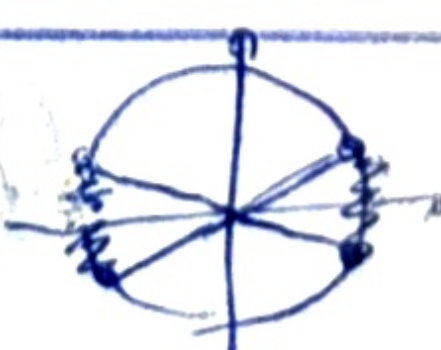
$$D_f = \mathbb{R} - \{k\pi, k\pi + \frac{\pi}{2}\} \text{ or } \mathbb{R} - \{k\frac{\pi}{2}\} \quad (4)$$

$$1 - \sin^2 x > 0$$

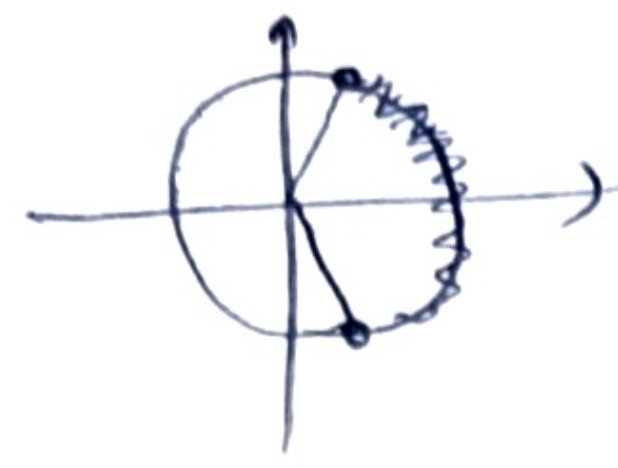
$$\sin^2 x < 1$$

$$\sin^2 x < \frac{1}{4} \rightarrow -\frac{1}{2} < \sin x < \frac{1}{2}$$

$$D_f = \{k\pi + \frac{\pi}{4}\}$$



الف) $r \sin x - 1 \leq 0$
 $r \sin x \geq 1 \rightarrow \sin x \geq \frac{1}{r}$  $D_f = \{rk\pi + \frac{\pi}{4}, rk\pi + \frac{5\pi}{4}\}$ (9)

ب) $1 - r \cos x \leq 0$
 $r \cos x \geq 1$
 $\cos x \geq \frac{1}{r}$  $D_f = \{rk\pi \pm \frac{\pi}{r}\}$

الف) $-1 \leq x^r + rx + 1 \leq 1$
 $-r \leq x^r + rx \leq 0$
 $-r \leq x(x+r)$
 $\rightarrow x^r + rx + r \geq 0$
 $(x+1)(x+r) \geq 0$
 $\frac{-r}{+} \quad \frac{-1}{-}$
 $x = 0, x = -r$
 $\frac{-r}{+} \quad \frac{-1}{-}$
 $[r, 0]$
 $(-\infty, -r] \cup [-1, +\infty)$
 $\xrightarrow{\cap} [-r, -1] \cup [-1, 0]$ (10)

ب) $-1 \leq \cos y \leq 1$
 $\omega - rx \geq 0$
 $0 \leq \omega - rx \leq 1$
 $-\omega \leq -rx \leq -r \rightarrow r \leq rx \leq \omega \rightarrow r \leq x \leq \frac{\omega}{r}$ $[r, \frac{\omega}{r}]$

الف) $x > 0$
 $1 - \log_r x > 0 \rightarrow \log_r x < 1$
 $x < r^1 = r$
 $\xrightarrow{\cap} 0 < x < r$ $(0, r)$ (9)

ب) $x > 0$
 $1 - \log_{\frac{1}{r}} x > 0 \rightarrow \log_{\frac{1}{r}} x < 1$
 $x < \frac{1}{r}$
 $\xrightarrow{\cap} 0 < x < \frac{1}{r}$ $(0, \frac{1}{r})$

الف) $r^x - x^r - 1 \leq 0$
 $r^x - x^r \geq 1$
 $r^x - x^r \geq r^r$
 $\rightarrow r^x - x^r \geq r$
 $x^r - rx + r \geq 0$
 $(x-1)(x-r) \geq 0$
 $\frac{1}{+} \quad \frac{r}{-}$
 $[1, r]$ (10)

ب) $\frac{rx + \omega}{r - rw} \in W$
 $rx + \omega \in rxW + rw$
 $rx - rxW \in rw - \omega$
 $x(r - rw) \in rw - \omega$
 $x \in \frac{rw - \omega}{r - rw}$
 $D_f = \{x \mid x = \frac{rk - \omega}{r - rk}, k \in W\}$