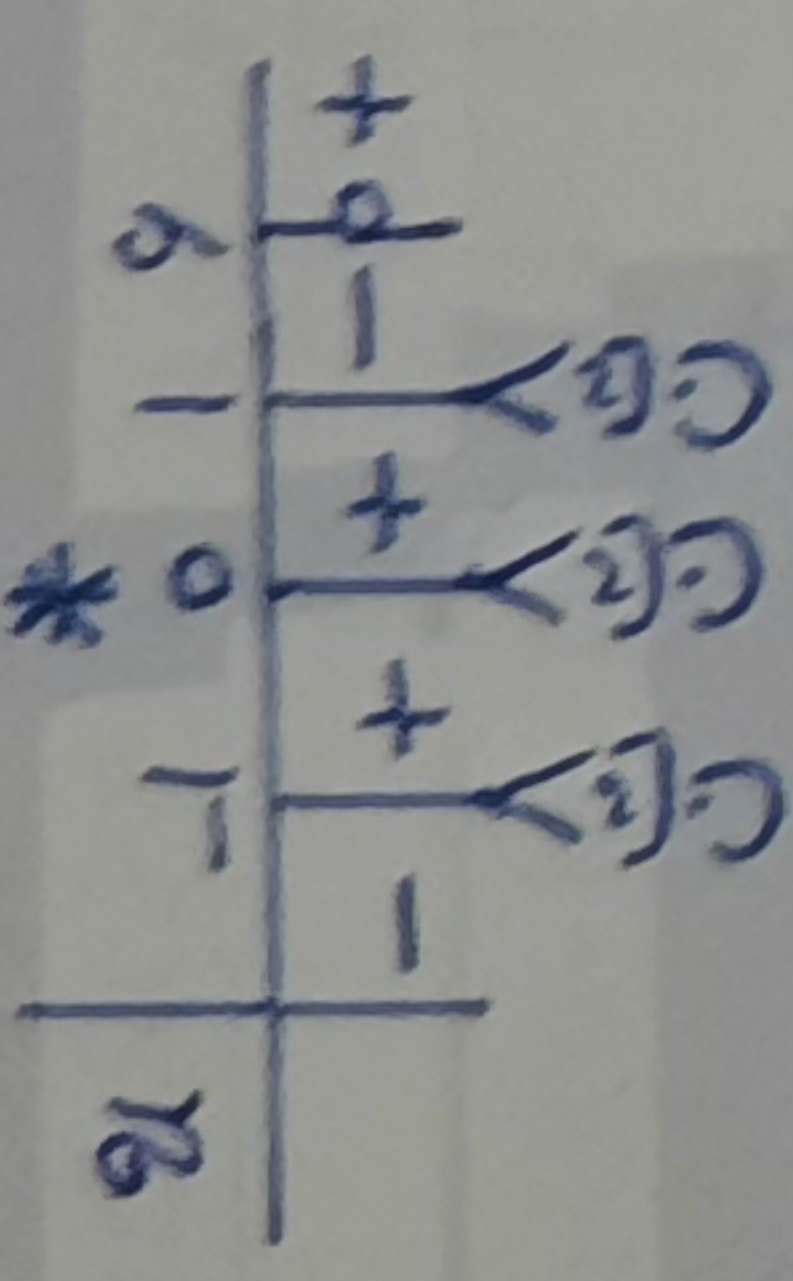
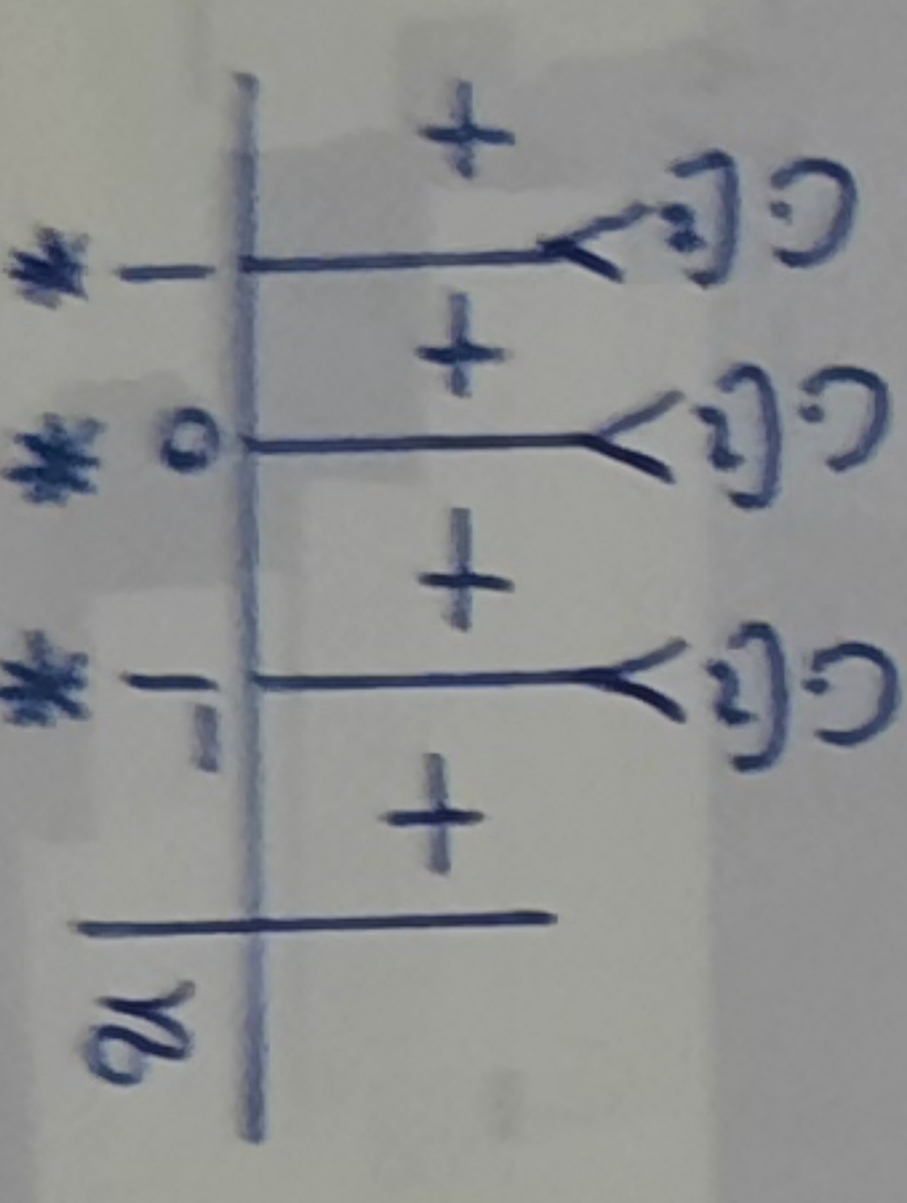
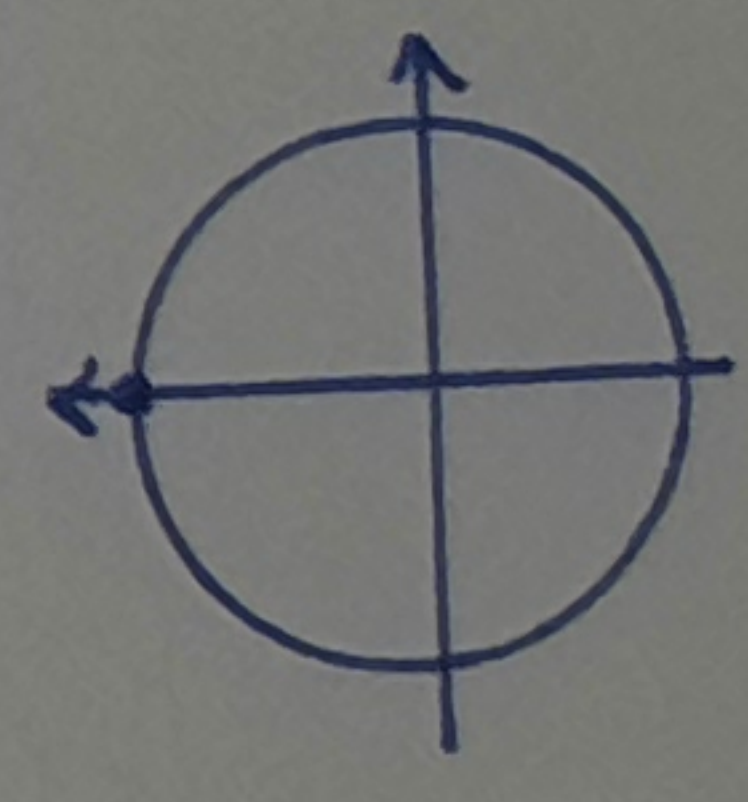
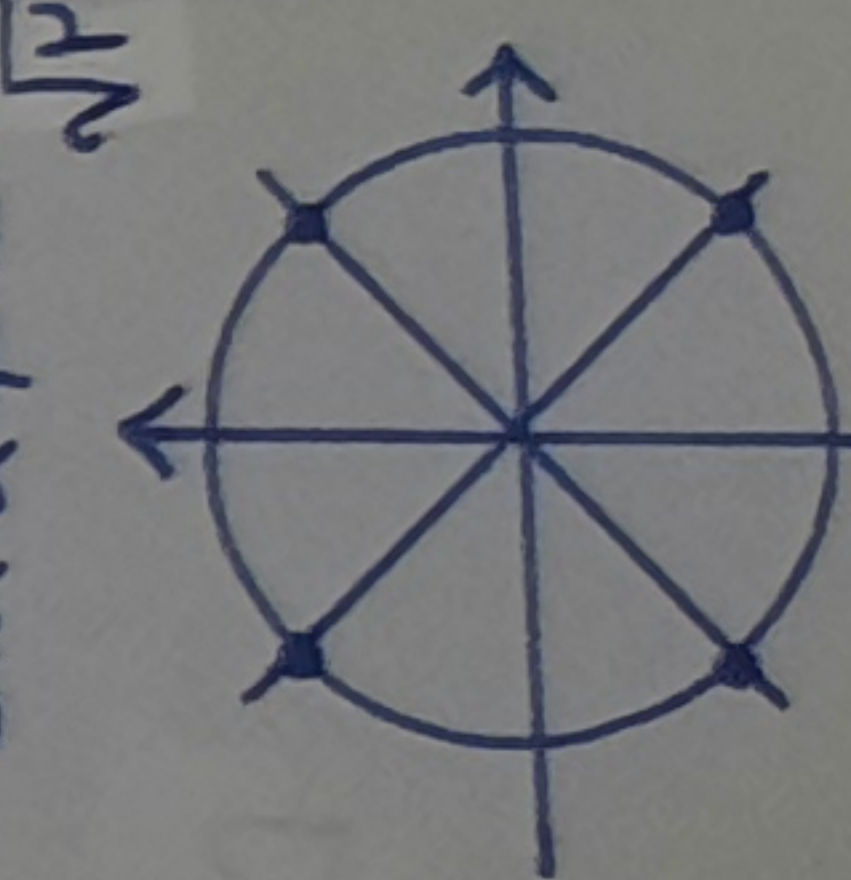
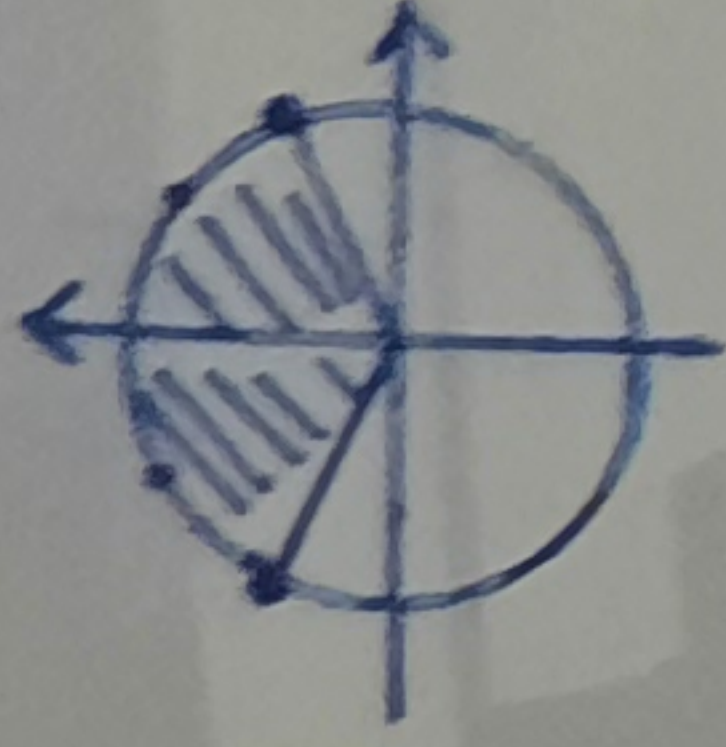


۱	الف) $\frac{x^3(x-1)(x+1)}{x(x-1)(x+1)} \geq 0$ $D_f = (-1, 0) \cup (0, 1) \cup (1, +\infty)$  ب) $\frac{x^3(x-1)(x+1)}{x(x-1)(x+1)} \geq 0$ $D_f = \mathbb{R} - \{0, \pm 1\}$ 
۲	الف) $x > 0 \rightarrow x > 0 \rightarrow$ اعداد مثبت $\checkmark$ $D_f = (0, +\infty)$ $\rightarrow$ صفر $\times$ $\rightarrow$ اعداد منفی $\times$ ب) $x > 0 \rightarrow$ اعداد مثبت $\checkmark$ $D_f = (0, +\infty)$ $\rightarrow$ صفر $\times$ $\rightarrow$ اعداد منفی $\times$
۳	الف) $2 - [x] > 0 \Rightarrow [x] < 2 \Rightarrow x < 3 \Rightarrow D_f = (-\infty, 3)$ ب) $2 - [x] > 0 \Rightarrow [x] < 2 \Rightarrow x < 2 \Rightarrow D_f = (-\infty, 2)$
۴	الف) $[x - \frac{1}{p}] + [x + \frac{1}{p}] \geq 0 \Rightarrow 1 + [x - \frac{1}{p}] + [x + \frac{1}{p}] \geq 1 \Rightarrow [x + \frac{1}{p}] + [x + \frac{1}{p}] \geq \frac{1}{p} \Rightarrow [x + \frac{1}{p}] \geq \frac{1}{2p}$ $[x + \frac{1}{p}] \geq 1 \Rightarrow x + \frac{1}{p} \geq 1 \Rightarrow x \geq 1 - \frac{1}{p} \Rightarrow D_f = [\frac{1}{p}, +\infty)$ ب) $[x - \frac{1}{p}] + [-x - \frac{1}{p}] \rightarrow \begin{cases} a \in \mathbb{Z} & [a] + [-a] = 0 \\ a \notin \mathbb{Z} & [a] + [-a] = -1 \end{cases} \Rightarrow x - \frac{1}{p} \in \mathbb{Z} \Rightarrow D_f = \{x x = k + \frac{1}{p}, k \in \mathbb{Z}\}$
۵	الف) $\sin x - 1 \neq 0$ $D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{2}\}$ $\sin x \neq 1$  ب) $\sin x - 1 \neq 0$ $\sin x \neq 1$ $\sin x \neq \frac{1}{p}$ $\sin x \neq \pm \frac{1}{\sqrt{p}} = \pm \frac{\sqrt{p}}{p}$ $D_f = \mathbb{R} - \{k\frac{\pi}{p} + \frac{\pi}{2}\}$ 

الف) $\begin{cases} \sqrt{2} \sin x - 1 \geq 0 \\ \sqrt{2} \sin x \geq 1 \\ \sin x \geq \frac{1}{\sqrt{2}} \end{cases}$

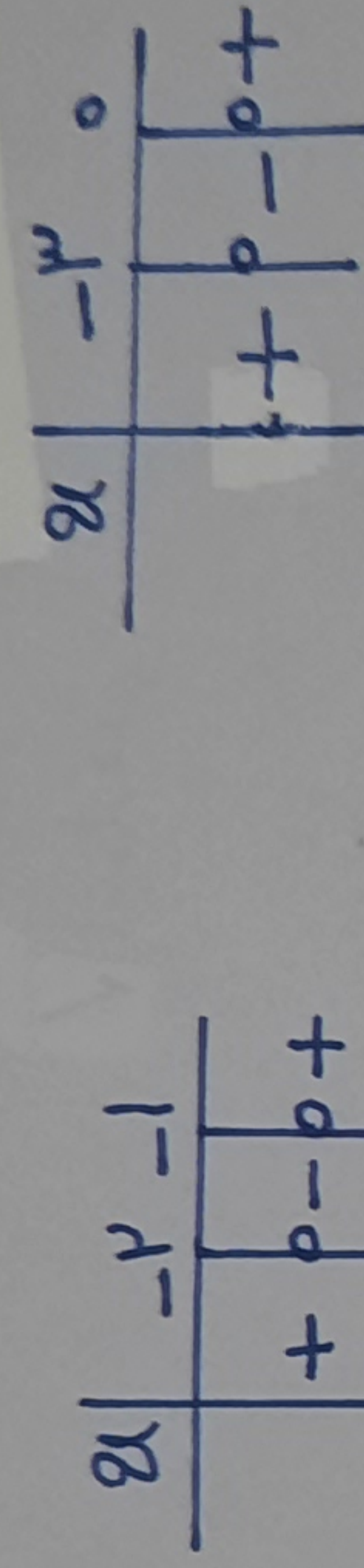


$$D_f = [2k\pi + \frac{\pi}{4}, 2k\pi + \frac{3\pi}{4}]$$

الف) $\begin{cases} -1 \leq |x| - 3 \leq 1 \\ \sqrt{2} \leq |x| \leq \sqrt{2} \rightarrow \sqrt{2} \leq x \leq \sqrt{2} \\ \rightarrow -\sqrt{2} \leq x \leq -\sqrt{2} \end{cases}$

$$U \rightarrow D_f = [-\sqrt{2}, \sqrt{2}] \cup [2, 4]$$

ب) $\begin{cases} -1 \leq x^2 + 3x + 1 \leq 1 \\ -1 \leq x^2 + 3x + 1 \\ 0 \leq x^2 + 3x + 2 \\ 0 \leq (x+2)(x+1) \end{cases}$



$$(-\infty, -2] \cup [-1, +\infty) \cap [-3, 0] \\ D_f = [-3, -2] \cup [-1, 0]$$

الف) $\begin{cases} x - 2 > 0 \\ x > 2 \end{cases}$

$$\begin{cases} \sqrt{2} \log_3(x-2) \geq 0 \\ -\log_3(x-2) \geq -2 \\ \log_3(x-2) \leq 2 \\ x-2 \leq 9 \\ x \leq 11 \end{cases}$$

$$\Rightarrow x > 2 \cap x < 11 \Rightarrow 2 < x < 11 \quad D_f = (2, 11]$$

الف) $\sqrt{x} \neq -1 \quad D_f = \mathbb{R}$

ب) $x^2 \neq 1 \Rightarrow x \neq 0 \quad D_f = \mathbb{R} - \{0\}$

ج) $\sqrt{x} \neq 2 \Rightarrow \sqrt{x} \neq 1 \Rightarrow x \neq \frac{1}{4} \quad D_f = \mathbb{R} - \{\frac{1}{4}\} \rightarrow \log_4 = \frac{1}{2}$

د) $x^2 \neq 3 \Rightarrow \log_3 x \neq x \Rightarrow D_f = \mathbb{R} - \{\log_3 x\}$

الف) $g = (f(x+1))!$

$f(x) \in \mathbb{W}$

$f(x) \in \mathbb{W} - 1$

$x \in \frac{\mathbb{W} - 1}{f}$

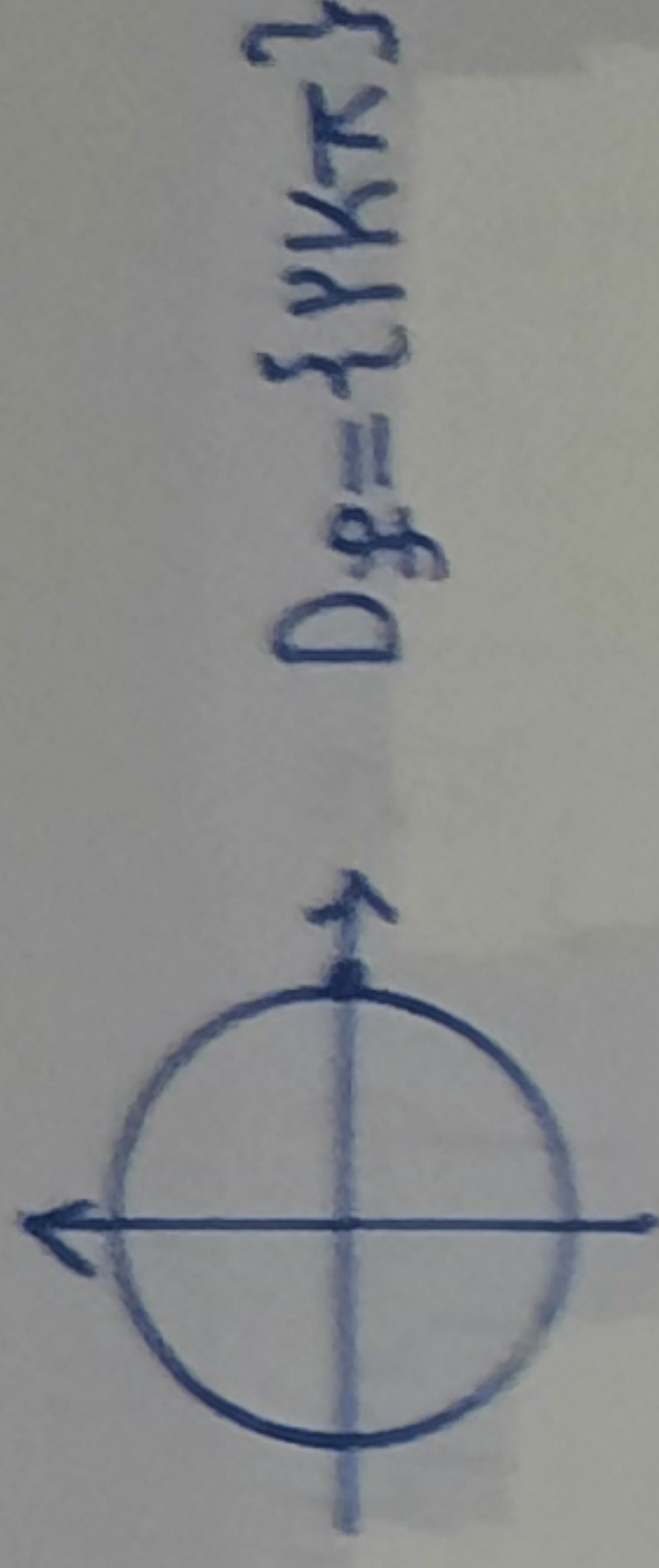
$$D_f = \{x \mid x = \frac{k-1}{f}, k \in \mathbb{W}\}$$

ب) $\frac{f(x)-1}{f(x)-a} \in \mathbb{W}$

$$x = -\frac{-\omega W + 1}{f W - 3}$$

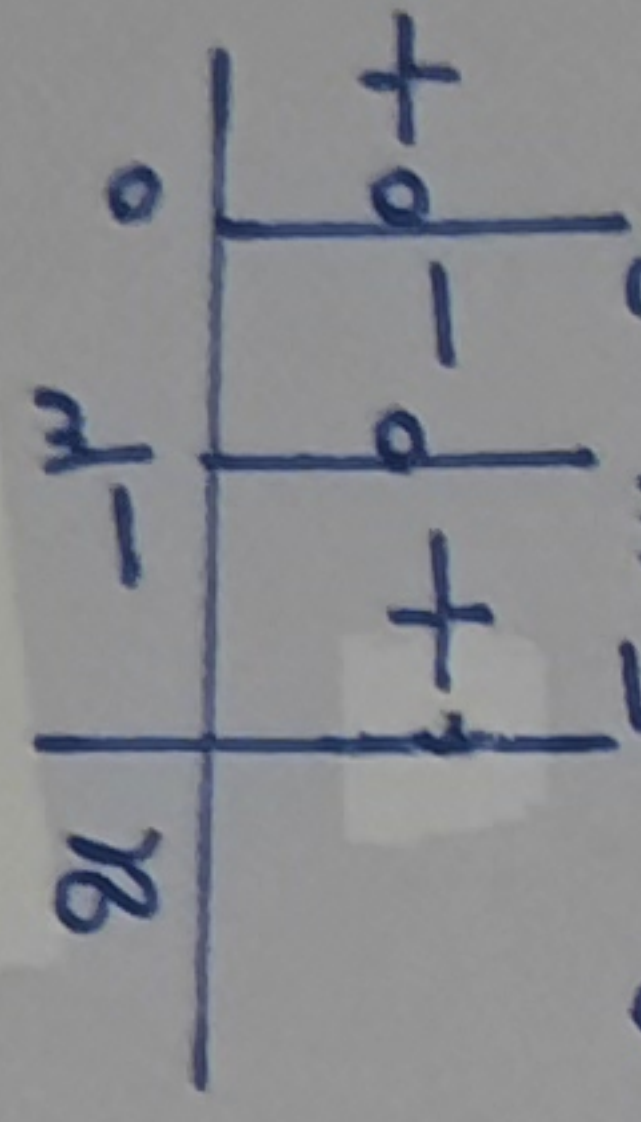
$$D_f = \{x \mid x = \frac{\omega k - 1}{f k - 3}, k \in \mathbb{W}\}$$

ب) $\begin{cases} \cos x - 1 \geq 0 \\ \cos x \geq 1 \end{cases}$



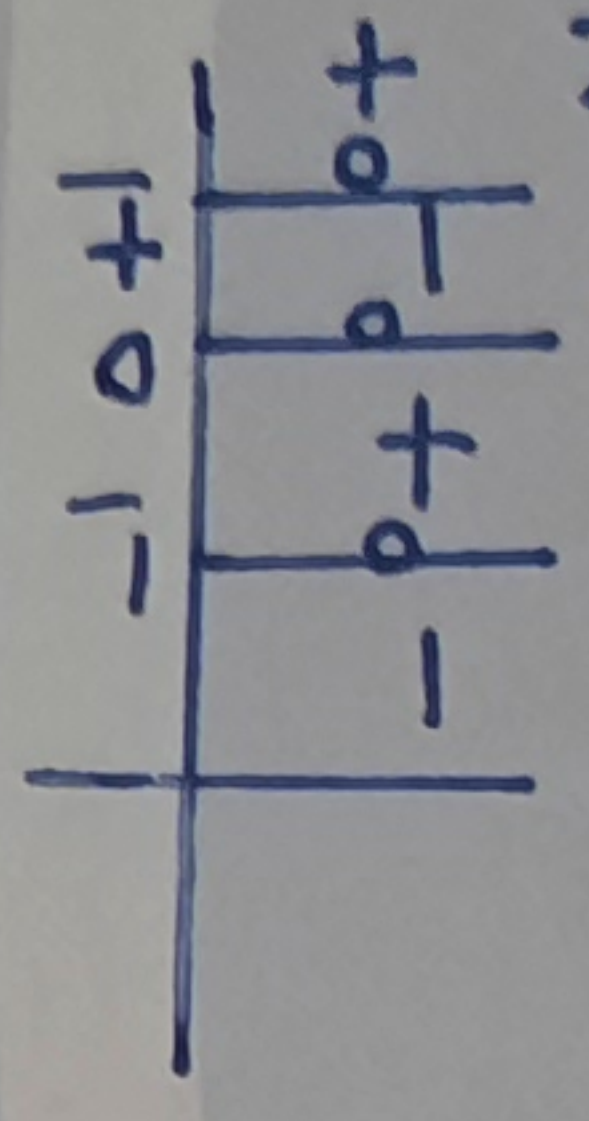
$$D_f = \{2k\pi\}$$

$$\begin{cases} x^2 + 3x + 1 \leq 1 \\ x^2 + 3x \leq 0 \\ x(x+3) \leq 0 \end{cases}$$



$$[-3, 0] \cap [-3, 0] \\ D_f = [-3, 0] \cup [-1, 0]$$

ب) $\begin{cases} x^3 - x > 0 \\ x(x^2 - 1) > 0 \\ x(x-1)(x+1) > 0 \end{cases}$



$$D_f = (-1, 0) \cup (0, 1) \cup (1, +\infty)$$

این خامسای همواره برقرار است.