

الف) $\frac{(x+3)}{(x-1)(x^2+5x-3)}$ $D_f = \mathbb{R} - \{-\frac{1}{5}, 1, 3\}$

ب) $\frac{(x+3)}{(x+1)(x^2+5x+3)}$ $D_f = \mathbb{R} - \{-3, -1, -\frac{1}{5}\}$

الف) $\frac{x+3}{(x-1)(x^2-x+1)}$ $D_f = \mathbb{R} - \{1\}$

ب) $\frac{x+3}{(x-1)(x^2+x+1)} \geq 0 \Rightarrow \frac{x}{x-1} + \frac{-3}{x^2+x+1} \geq 0 \Rightarrow D_f = (-\infty, 3] \cup (1, +\infty)$

$x^2-5x+5-2x+5 \neq 0 \rightarrow x^2-7x+10 \neq 0 \rightarrow (x-5)(x-2) \neq 0 \rightarrow \begin{cases} x \neq 5 \\ x \neq 2 \end{cases}$
 $x^2+5x-5-2x+5 \neq 0 \rightarrow x^2+3x \neq 0 \rightarrow x(x+3) \neq 0 \rightarrow \begin{cases} x \neq 0 \\ x \neq -3 \end{cases}$
 $D_f = \mathbb{R} - \{-3, 0, 2, 5\}$

الف) $[-x] - 2 \geq 0 \rightarrow [-x] \geq 2 \rightarrow -x \geq 2 \rightarrow \boxed{x \leq -2} \rightarrow D_f = (-\infty, -2]$

ب) $([x]-3)([x]+1) \neq 0 \rightarrow \begin{cases} [x] = 3 \rightarrow x = [3, 4) \\ [x] = -1 \rightarrow x = [-1, 0) \end{cases} \Rightarrow D_f = \mathbb{R} - \{[-1, 0) \cup [3, 4)\}$

الف) $[x - \frac{1}{4} + 1] + [x + \frac{1}{4}] - 1 \geq 0 \rightarrow 2[x + \frac{1}{4}] \geq 1 \rightarrow [x + \frac{1}{4}] \geq \frac{1}{2}$
 $[x + \frac{1}{4}] \geq 1 \rightarrow x + \frac{1}{4} \geq 1 \rightarrow x \geq \frac{3}{4} \rightarrow D_f = [\frac{3}{4}, +\infty)$

ب) $[x] + [-x]$ طبق قاعده 1 $\rightarrow x - \frac{1}{4} \in \mathbb{Z} \rightarrow x \in \mathbb{Z} + \frac{1}{4} \Rightarrow D_f = \{x | x = k + \frac{1}{4}, k \in \mathbb{Z}\}$

$$\text{a)} \quad \begin{aligned} \tan x &\neq 0 \\ \tan x &\neq -1 \\ \sin x &\neq 0 \\ \cos x &\neq 0 \end{aligned} \quad D_f = \mathbb{R} - \left\{ \frac{k\pi}{r}, k\pi - \frac{\pi}{r} \right\}$$

$$\text{b)} \quad \begin{aligned} 1 - f \sin^2 x &\geq 0 \\ \sin^2 x &\leq \frac{1}{f} \\ -\frac{1}{f} &\leq \sin x \leq \frac{1}{f} \end{aligned} \quad -1 \leq \sin x \leq 1 \Rightarrow D_f = \left[\left[r k \pi - \frac{\Delta r}{f}, r k \pi + \frac{\Delta r}{f} \right] \cup \left[r k \pi - \frac{\pi}{f}, r k \pi + \frac{\pi}{f} \right] \right]$$

$$\text{a)} \quad \begin{aligned} r \sin x &\geq 0 \\ \sin x &\geq \frac{1}{r} \end{aligned} \quad -1 \leq \sin x \leq 1 \Rightarrow D_f = \left[r k \pi + \frac{\Delta r}{r}, r k \pi + \frac{\pi}{r} \right]$$

$$\text{b)} \quad \begin{aligned} 1 - r \cos x &\geq 0 \\ \cos x &\leq \frac{1}{r} \end{aligned} \quad -1 \leq \cos x \leq 1 \Rightarrow D_f = \left[r k \pi - \frac{\pi}{r}, r k \pi + \frac{\pi}{r} \right]$$

$$\text{a)} \quad -1 \leq \sin(x + r n + 1) \leq 1 \rightarrow D_f = \mathbb{R}$$

$$\text{b)} \quad \begin{aligned} \Delta - r x &\geq 0 \\ x &\leq \frac{\Delta}{r} \end{aligned} \quad \begin{aligned} -1 &\leq \sqrt{\Delta - r x} \leq 1 \\ 0 &\leq \Delta - r x \leq 1 \\ r &\leq x \leq \frac{\Delta}{r} \end{aligned} \Rightarrow D_f = \left[r, \frac{\Delta}{r} \right]$$

$$\text{a)} \quad 1 - \log \frac{x}{r} > 0 \rightarrow \log \frac{x}{r} < 1 \rightarrow x < r \Rightarrow D_f = (-\infty, r)$$

$$\text{b)} \quad 1 - \log \frac{x}{\frac{1}{r}} > 0 \rightarrow \log \frac{x}{\frac{1}{r}} < 1 \rightarrow x < \frac{1}{r}$$

$$\text{a)} \quad r^{n-n^r} \geq 1 \rightarrow n - n^r \geq r \rightarrow n^r - n + r \leq 0 \quad (n-r)(n-1) \leq 0$$

$$\frac{n}{r} \mid \frac{1}{r} - \frac{r}{r} \rightarrow D_f = [1, r]$$

$$\text{b)} \quad \frac{r x + \Delta}{r n + r} \in W_i \rightarrow \frac{-f W_i + \Delta}{r W_i - r} = x \rightarrow D_f = \left\{ x \mid x = \frac{-f k + \Delta}{r k - r}, k \in W \right\}$$