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الف) $\frac{x(x-4)}{x(x-1)(x+1)} \geq 0$ $x \neq 1, -1$ $x \rightarrow 0, 4$ $D_f = (-1, 0) \cup (0, 1) \cup [4, +\infty)$

ب) $\frac{x^2(x-1)(x+1)}{x(x-1)(x+1)} \geq 0$ $x \neq 1, -1$ $x \rightarrow 0, 4$ $D_f = (-\infty, -1) \cup (-1, 0) \cup (0, 1) \cup (1, +\infty)$

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الف) $x + |x| > 0$ $x > -|x|$ $x > 0$ $D_f = (0, +\infty)$

ب) $x|x| > 0$ $x > 0$ $D_f = (0, +\infty)$

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الف) $y - [x] \geq 0$ $y \geq [x]$ $D_f = (-\infty, y]$

ب) $y - [x] > 0$ $y > [x]$ $D_f = (-\infty, y)$

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الف) $[x + \frac{1}{y} - 1] + [x + \frac{1}{y}] \geq 0$ $y[x + \frac{1}{y}] \geq 1$ $D_f = [\frac{1}{y}, +\infty)$

$[x + \frac{1}{y}] \geq \frac{1}{y}$ $x + \frac{1}{y} \geq 1$ $x \geq \frac{1}{y}$

ب) $[x - \frac{1}{y}] + [-(x - \frac{1}{y})] \geq 0$

$a \in \mathbb{Z} \quad [a] + [-a] = 0$
 $a \notin \mathbb{Z} \quad [a] + [-a] = -1$ $\rightarrow x - \frac{1}{y} \in \mathbb{Z}$

$D_f = \{x | x = k + \frac{1}{y}, k \in \mathbb{Z}\}$

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الف) $\frac{y}{\sin x - 1}$ $\sin x - 1 \neq 0$ $\sin x \neq 1$ $D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{2}\}$

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ب) $\frac{y}{y \sin^2 x - 1}$

$y \sin^2 x - 1 \neq 0$ $\sin^2 x \neq \frac{1}{y}$

$\sin x \neq \pm \frac{\sqrt{y}}{y}$

$D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{2} | k \in \mathbb{Z}\}$

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الف) $2\sin n - 1 \geq 0 \Rightarrow \sin n \geq \frac{1}{2} \quad D_F = \left[2k\pi + \frac{\pi}{6}, 2k\pi + \pi - \frac{\pi}{6} \right]$

ب) $\cos n - 1 \geq 0 \Rightarrow \cos n \geq 1 \quad D_F = \{2k\pi \mid k \in \mathbb{Z}\}$

الف) $-1 \leq |x| - 2 \leq 1 \Rightarrow |x| \geq 2 \quad 2 \leq x \leq -2 \quad |x| < 2 \Rightarrow -2 < x < 2$
 $D_F = [-2, -2] \cup [2, 2]$

ب) $-1 \leq x^2 + 2x + 1 \leq 1 \Rightarrow x^2 + 2x + 1 \leq 1 \Rightarrow x(x+2) \leq 0$
 $-2 \leq x \leq 0$
 $D_F = [-2, -2] \cup [-1, 0]$

الف) $x - 2 > 0 \Rightarrow x > 2$
 $2 - 1 \leq \log_2^{x-2} \Rightarrow \log_2^{x-2} \leq 2 \Rightarrow x - 2 \leq 4 \Rightarrow x \leq 6$
 $D_F = (2, 6]$

ب) $x^2 - x > 0 \Rightarrow x(x-1) > 0 \Rightarrow x < 0 \text{ or } x > 1$
 $D_F = (-1, 0) \cup (1, +\infty)$

الف) $x^n + 1 \neq 0 \Rightarrow x^n \neq -1 \quad D_F = \mathbb{R}$

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

ج) $x^n - 2 \neq 0 \Rightarrow x^n \neq 2 \quad x \neq \log_2^2 \quad D_F = \mathbb{R} - \{\log_2^2\}$

د) $x^n - 2 \neq 0 \Rightarrow x^n \neq 2 \quad x \neq \log_2^2 \quad D_F = \mathbb{R} - \{\log_2^2\}$

الف) $x+1 \in \mathbb{W} \Rightarrow x \in \mathbb{W} - 1 \Rightarrow x \in \frac{\mathbb{W}-1}{F} \quad D_F = \{x \mid x = \frac{k-1}{F}, k \in \mathbb{W}\}$

ب) $\frac{x^2 - 2}{x - 2} \in \mathbb{W} \Rightarrow x^2 - 2 \in (x - 2)\mathbb{W} \Rightarrow x^2 - 2 \in -\mathbb{W} + 2$
 $x(x - 2) \in -\mathbb{W} + 2$
 $x \in \frac{-\mathbb{W} + 2}{x - 2}$
 $D_F = \{x \mid x = \frac{-\mathbb{W} + 2}{x - 2}, k \in \mathbb{W}\}$