

الف) $\frac{x(x-6)}{x(x+1)(x-1)} \geq 0 \Rightarrow \frac{-1}{\frac{1}{x} + \frac{1}{x+1} + \frac{1}{x-1}} \geq 0 \Rightarrow \boxed{(-1, 0) \cup (0, 1) \cup [6, +\infty)}$
 $\Rightarrow x(x+1)(x-1) \neq 0 \Rightarrow \mathbb{R} \setminus \{-1, 0, 1\}$

ب) $\frac{x^3(x+1)(x-1)}{x(x+1)(x-1)} \geq 0 \Rightarrow \frac{-1}{\frac{1}{x} + \frac{1}{x+1} + \frac{1}{x-1}} \geq 0 \Rightarrow \boxed{\mathbb{R} - \{-1, 0, 1\}}$
 $\Rightarrow D = \mathbb{R} - \{-1, 0, 1\}$

الف) $x + |x| \geq 0 \Rightarrow |x| \geq -x \Rightarrow \boxed{D = \mathbb{R}^+}$

ب) $x|x| > 0 \Rightarrow \begin{cases} x > 0 \\ x < 0 \end{cases} \Rightarrow \boxed{D = \mathbb{R}^+}$

الف) $2 - [x] \geq 0 \Rightarrow [x] \leq 2 \Rightarrow \boxed{D = (-\infty, 3)}$

ب) $2 - [x] > 0 \Rightarrow 2 > [x] \Rightarrow \boxed{D = (-\infty, 2)}$

الف) $[x - \frac{1}{3}] + [x + \frac{1}{3}] \geq 0 \Rightarrow [x - \frac{1}{3}] + [x - \frac{1}{3} + 1] \geq 0$
 $\Rightarrow 2[x - \frac{1}{3}] \geq -1 \Rightarrow x - \frac{1}{3} \geq 0 \Rightarrow \boxed{D = [\frac{1}{3}, +\infty)}$

ب) $\left. \begin{array}{l} [9x - 9] = 0 \\ [9] + [-9] = 0 \end{array} \right\} \Rightarrow \text{تعدد عبارت صحیح}$
 $\left. \begin{array}{l} [9] + [-9] = 0 \\ [9] + [-9] = 0 \end{array} \right\} \Rightarrow \text{تعدد عبارت صحیح}$
 $x - \frac{1}{3} \in \mathbb{Z} \Rightarrow D = \{x \mid x = k + \frac{1}{3}, k \in \mathbb{Z}\}$

الف) $\sin x - 1 \neq 0 \Rightarrow \sin x \neq 1 \Rightarrow \boxed{2k\pi - \frac{3\pi}{2}}$

ب) $2\sin^2 x - 1 \neq 0 \Rightarrow 2\sin^2 x \neq 1 \Rightarrow \sin^2 x \neq \frac{1}{2} \Rightarrow \sin x \neq \pm \frac{1}{\sqrt{2}} \Rightarrow \boxed{\frac{k\pi + \pi/4}{2}, \frac{k\pi + 3\pi/4}{2}}$

الف) $2\sin x - 1 \geq 0 \Rightarrow \sin x \geq \frac{1}{2} \Rightarrow \boxed{[2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}]}$

ب) $\cos x - 1 \geq 0 \Rightarrow \cos x \geq 1 \Rightarrow \boxed{[2k\pi]}$
 زیرا $|\cos x| \leq 1$ است و $\cos x = 1$ فقط در $2k\pi$

الف) $-1 \leq |x| \leq 1 \Rightarrow 2 \leq |x| \leq 2 \Rightarrow x \rightarrow D = [2, 4] \cup [4, -2]$
 $-1 \leq x^2 + 3x + 1 \leq 1 \Rightarrow I = \{x \mid x^2 + 3x + 2 \geq 0\} \Rightarrow x \leq -2 \vee x \geq -1$
 $II = \{x \mid x^2 + 3x \leq 0\} \Rightarrow -3 \leq x \leq 0$

ب) $I \cup II = D = [-3, -2] \cup [-1, 0]$

الف) $2 - \log_3 x^2 \geq 0 \Rightarrow \log_3 x^2 \leq 2 \Rightarrow x^2 \leq 9 \Rightarrow (I) x \leq 1$

(II) $x - 2 > 0 \Rightarrow x > 2 \Rightarrow (II) \cup (I) = D = \{x \mid x > 2\}$

ب) $x^3 - x > 0 \Rightarrow x(x+1)(x-1) > 0 \Rightarrow \boxed{(-1, 0) \cup (1, +\infty)}$

الف) $e^x \neq -1 \Rightarrow \boxed{D = \mathbb{R}}$

ب) $e^x \neq 2 \Rightarrow \boxed{D = \mathbb{R} - \{\log_e 2\}}$

ب) $e^x \neq 1 \Rightarrow \boxed{D = \mathbb{R} - \{0\}}$

الف) $e^{x+1} < w \Rightarrow x \in \frac{w+1}{e}$
 $2x - 2 = 2xw - \Delta w$
 $2x = 2xw - \Delta w + 2$
 $x = \frac{2xw - \Delta w + 2}{2}$
 $D = \{x \mid x = \frac{2xw - \Delta w + 2}{2}, k \in \mathbb{W}\}$