

الف) $\frac{x^2 - 6x}{x^3 - x} \geq 0 \rightarrow x(x-6) = 0 \rightarrow x \leq 6$
 $\frac{x^3 - x}{x^3 - x} \geq 0 \rightarrow x(x-1)(x+1) = 0 \rightarrow x \leq 1$
 $\frac{x^3 - x}{x^3 - x} \geq 0 \rightarrow x \neq 0 \text{ و } -1$
 $D_f = (-\infty, -1) \cup (0, 1) \cup [6, +\infty)$
 ب) $D_f = \mathbb{R} - \{-1, 0\}$

الف) $x + |x| > 0 \rightarrow x \neq 0 \text{ و } -/x = +$
 فقط اعداد + جواب می دهد
 $D_f = (0, +\infty)$
 ب) $x|x| > 0 \rightarrow x \neq 0 \text{ و } -/x = +$
 فقط اعداد + جواب می دهد
 $D_f = (0, +\infty)$

الف) $2 - [x] \geq 0 \rightarrow [x] \leq 2 \rightarrow D_f = (-\infty, 3)$
 ب) $2 - [x] > 0 \rightarrow [x] < 2 \rightarrow D_f = (-\infty, 2)$

الف) $x + \frac{1}{x} = x - \frac{1}{x} + 1 \rightarrow [x + \frac{1}{x}] = [x - \frac{1}{x}] + 1$
 $[x - \frac{1}{x}] + 1 \geq 0 \rightarrow D_f = [\frac{1}{x} + \infty)$
 ب) عبارت تناقضی است پس هیچ شذیذی در هیچ جا نیست
 $D_f = \{n + \frac{1}{x} | n \in \mathbb{Z}\}$

الف) $y = \frac{1}{\sin x - 1} \rightarrow \sin x \neq 1$
 $\sin x = 1 \rightarrow x = \frac{\pi}{2} + 2k\pi$
 $D_f = \mathbb{R} - \{\frac{\pi}{2} + 2k\pi\}$
 ب) $1 \sin^2 x \neq 1 \rightarrow \sin^2 x \neq \frac{1}{4} \rightarrow \sin x \neq \pm \frac{1}{2}$
 $D_f = \mathbb{R} - \{\frac{\pi}{6} + k\pi, \frac{5\pi}{6} + k\pi\}$

$2\sin \alpha - 1 \geq 0 \rightarrow \sin \alpha \geq \frac{1}{2} \rightarrow D_f = \left[\frac{\pi}{6} + 2k\pi, \frac{5\pi}{6} + 2k\pi \right]$ (الف)	٦
$\cos \alpha - 1 \geq 0 \rightarrow \cos \alpha \geq 1 \rightarrow \cos \alpha = 1$ چون بیشترین مقدار $\cos \alpha = 1$ است	$D_f = \{2k\pi\}$ (ب)
$-1 \leq \alpha \leq 1 \rightarrow 2 \leq \alpha \leq 4 \rightarrow D_f = [-4, -2] \cup [2, 4]$ (الف)	٧
$1 > \alpha^2 + 3\alpha + 1 \geq -1 \rightarrow \alpha^2 + 3\alpha + 2 \geq 0 \rightarrow (\alpha+1)(\alpha+2) \geq 0$ $\alpha \leq -2 \text{ یا } \alpha \geq -1$ $\alpha^2 + 3\alpha \leq 0 \rightarrow \alpha(\alpha+3) \leq 0 \rightarrow 0 \geq \alpha \geq -3$ $\alpha + 2 > 0 \rightarrow 2 - \log_3(\alpha - 2) \geq 0 \rightarrow \alpha - 2 \leq 9 \rightarrow \alpha \leq 11$ (الف)	$D_f = [-2, -1] \cup [0, 11]$ (ب)
$\alpha^2 - \alpha > 0 \rightarrow \alpha(\alpha - 1)(\alpha + 1) > 0$	$D_f = (-1, 0) \cup (1, +\infty)$ (ب)
$f^\alpha = 1 \neq 0 \rightarrow f^\alpha \neq 1$ $f^0 = 1 \quad D_f = \mathbb{R} - \{0\}$ (ب)	$D_f = \mathbb{R}$ (الف)
$f^\alpha \neq 2 \rightarrow \alpha \neq \log_f 2$ $D_f = \mathbb{R} - \{\log_f 2\}$ (ب)	$f^\alpha \neq 2 \rightarrow \alpha \neq \log_f 2$ $D_f = \mathbb{R} - \{\log_f 2\}$ (الف)
$f\alpha + 1 = 0 \text{ و } 2, 3, 4, \dots \rightarrow f\alpha = n \rightarrow \alpha = \frac{n-1}{f} \rightarrow D_f = \left\{ -\frac{1}{f}, \frac{1}{f}, \frac{2}{f}, \dots \right\}$ $D_f = \left\{ \frac{n-1}{f} \mid n \in \mathbb{N} \right\}$ (الف)	١٠
$\frac{f^\alpha - f}{f^\alpha - 1} = n$ $f^\alpha - f = n(f^\alpha - 1)$ $f^\alpha - f = f^n \alpha - \alpha f$ $f^\alpha(1-n) = f - \alpha f$	$\alpha = \frac{n-1}{f}$ $D_f = \left\{ \frac{f^n - f}{f^n - 1} \mid n \in \mathbb{N} \right\}$ (ب)