

الف) $2x^3 + 3x^2 - 1x + 3 \neq 0 \xrightarrow{\text{تقسیم}} (x-1)(2x^2 + 5x - 3) \rightarrow (x-1)(2x-1)(x+3) \neq 0$
 $x \neq 1, \frac{1}{2}, -3 \rightarrow D = R - \{1, \frac{1}{2}, -3\}$

ب) $x^3 + 9x^2 + 10x + 3 \neq 0 \xrightarrow{\text{تقسیم}} (x+1)(x^2 + 8x + 3) \rightarrow (x+1)(x+\frac{1}{2})(x+6) \neq 0$
 $x \neq -1, -\frac{1}{2}, -6 \rightarrow D = R - \{-1, -\frac{1}{2}, -6\}$

الف) $\text{مجموع مربعات} = 0 \rightarrow (x-1) \rightarrow (x-1)(x^2 + x + 1) - 2x(x-1)$
 $\rightarrow (x-1)(x^2 + x + 1 - 2x) \rightarrow x \neq 1 \rightarrow D = R - \{1\}$
 همیشه مثبت $\Delta < 0 \rightarrow x^2 - x + 1$

ب) $x^3 - 2x^2 + 1x - 1 > 0 \rightarrow (x-1)(x^2 - x + 1) > 0$
 $D = (16 + \infty) \sqrt{\frac{x+3}{n-1}} = \frac{-3 \pm 1}{+1-1}$
 در صورت کسر $x+3$ هم راسته! $\frac{1}{-} +$

الف) $x^2 - \Delta(x-1) - 2x + \Delta \neq 0$
 $x^2 - \Delta(x-1) - 2x + \Delta = x^2 - \Delta x + \Delta - 2x + \Delta = x^2 - 7x + 2\Delta$
 $(x-2)(x-\Delta) \rightarrow x = 2, \Delta$
 حالت دوم $x < 1$
 $x^2 - \Delta + \Delta x - 1x + \Delta = x^2 + \Delta x \rightarrow x(x+\Delta) = x - 66 - 3$
 $D = R - \{-266, 46\}$

الف) $[-x] - 1 \geq 0 \rightarrow [-x] \geq 1 \rightarrow -x \geq 1 \rightarrow x \leq -1$
 $D_f = (-\infty, -1]$

ب) $[x]^2 - 2[x] + 3 \neq 0 \rightarrow ([x]-2)([x]+1) \neq 0 \rightarrow [x] \neq 2$
 $\rightarrow [x] \neq -1 \xrightarrow{\text{پس}} D = R - ([-1, 0) \cup [2, 4))$

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

ب) $[x - \frac{1}{2}] + [\frac{1}{2} - x] \geq 0 \rightarrow x - \frac{1}{2} = y \xrightarrow{\text{پس}} \frac{1}{2} - x = -y$
 $\xrightarrow{\text{پس}} [y] + [-y] \geq 0 \rightarrow D = \{n + \frac{1}{2} \mid n \in \mathbb{Z}\}$

$\cos z \neq 0 \rightarrow \sin z \neq 0 \rightarrow \sin z \neq \frac{k\pi}{r}$ $\tan z + 1 \neq 0 \rightarrow z \neq -\frac{\pi}{4} + k\pi$ $Df = R - \left\{ \frac{k\pi}{r} : k \in \mathbb{Z} \right\} \cup \left\{ -\frac{\pi}{4} + k\pi : k \in \mathbb{Z} \right\}$	الف	
$1 - r \sin^2 z \geq 0 \rightarrow \sin z \leq \frac{1}{r} \rightarrow Df = \left[\frac{k\pi - \frac{\pi}{2}}{r}, \frac{k\pi + \frac{\pi}{2}}{r} \right]$	ب	۶
$r \sin z \geq 1 \rightarrow \sin z \geq \frac{1}{r}$ $\rightarrow Df = \left[\frac{\frac{\pi}{2}}{r} + r k \pi, \frac{\frac{\pi}{2}}{r} + r k \pi \right]$	الف	۷
$1 - r \cos z \geq 0 \rightarrow \cos z \leq \frac{1}{r} \rightarrow \frac{\pi}{r} \leq z \leq \frac{2\pi}{r}$ $Df = \left[\frac{\pi}{r} + r k \pi, \frac{2\pi}{r} + r k \pi \right]$	ب	
$-1 \leq z^2 + rz + 1 \leq 1$ $z^2 + rz \leq 0 \rightarrow z(z+r) \leq 0$ $z^2 + rz + 1 \geq 0$ $(z+1)(z+r) \geq 0$ $\rightarrow Df = [-r, -1] \cup [-1, 0]$	الف	۸
$0 \leq \sqrt{1-rz} \leq 1 \rightarrow 1-rz \geq 0 \rightarrow z \leq \frac{1}{r}$ $1-rz \leq 1 \rightarrow -rz \leq -1 \rightarrow z \geq \frac{1}{r}$ $Df = \left[\frac{1}{r}, \frac{1}{r} \right]$	ب	
$z > 0 \mid 1 - \log_r z > 0 \rightarrow \log_r z < 1 \rightarrow z < r$ $Df = (0, r)$	الف	
$z > 0 \mid 1 - \log_{\frac{1}{r}} z > 0 \rightarrow \log_{\frac{1}{r}} z < 1$ $Df = \left(\frac{1}{r}, 1 \right)$ چنان تابعی که رشتی نزولی هست	ب	۹
$r^f z - z^r - 1 \geq 0 \rightarrow r^{fz-z^r} \geq 1 \rightarrow r^{fz-z^r} \geq r^3$ $fz - z^r \geq 3 \rightarrow 0 \geq z^r - fz + 3 \rightarrow (z-r)(z-1)$ $z=r \quad z=1$ $Df = [1, r]$	الف	۱۰
$\frac{rz+d}{rz+f} = n \rightarrow n \in \mathbb{W} \rightarrow rz+f \neq 0 \rightarrow z \neq -\frac{f}{r}$ $\rightarrow rz+d = n(rz+f) \rightarrow z = \frac{fn-d}{r-rn}$ $P_f = \left\{ \frac{fn-d}{r-rn} \mid n \in \mathbb{W} \right\}$	ب	

۲- ب) $\frac{x+3}{x^3-2x^2+2x-1} \geq 0 \rightarrow \frac{x+3}{(x-1)(x^2-x+1)} \geq 0$

صاحب ضرایب منفرات (نقش‌پذیر برای $x-1$) رسمی ندارد! $\Delta < 0$

$\sim D_f = (-\infty, -3] \cup (1, +\infty)$

$\begin{array}{c} -3 \quad 1 \\ + \quad - \quad + \end{array}$