

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) $2x^3 + 9x^2 + 10x + 3 \neq 0 \xrightarrow{\text{تقسیم}} (x+1)(2x^2 + 7x + 3) \rightarrow (x+1)(x+\frac{1}{2})(2x+3) \neq 0$
 $x \neq -1, -\frac{1}{2}, -\frac{3}{2} \rightarrow D = R - \{-1, -\frac{1}{2}, -\frac{3}{2}\}$

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

ب) $2x^3 - 2x^2 + 2x - 1 > 0 \rightarrow (x-1)(x^2 - x + 1) > 0$
 $D = (16 + \infty)$
 $x=1$ همیشه مثبت

الف) $x^2 - \Delta(x-1) - 2x + \Delta \neq 0$
 $x^2 - \Delta(x-1) - 2x + \Delta = x^2 - \Delta x + \Delta - 2x + \Delta = x^2 - 7x + 2\Delta$
 $(x-2)(x-\Delta) \rightarrow x = 2, \Delta$
 $x^2 - \Delta + \Delta x - 2x + \Delta = x^2 + 2x \rightarrow x(x+2) = x - 66 - 3$
 $D = R - \{-2, 66, 2, 6\Delta\}$

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

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

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



$\cos z \neq 0 \quad \sin z \neq 0 \rightarrow z \neq \frac{k\pi}{r}$ $\tan z + 1 \neq 0 \rightarrow z \neq -\frac{\pi}{r} + k\pi$ $Df = R \left(\left\{ \frac{k\pi}{r} : k \in \mathbb{Z} \right\} \cup \left\{ -\frac{\pi}{r} + k\pi : k \in \mathbb{Z} \right\} \right)$	الف	
$1 - r \sin^2 z \geq 0 \rightarrow \sin z \leq \frac{1}{r} \rightarrow Df = \left[k\pi - \frac{\pi}{r}, k\pi + \frac{\pi}{r} \right]$	ب	۶
$r \sin z \geq 1 \rightarrow \sin z \geq \frac{1}{r}$ $\rightarrow Df = \left[\frac{\pi}{r} + r k\pi, \frac{\pi}{r} + r k\pi \right]$	الف	۷
$1 - r \cos z \geq 0 \rightarrow \cos z \leq \frac{1}{r} \rightarrow \frac{\pi}{r} \leq z \leq \frac{\pi}{r}$ $Df = \left[\frac{\pi}{r} + r k\pi, \frac{\pi}{r} + r k\pi \right]$	ب	
$-1 \leq z^r + r z + 1 \leq 1$ $z^r + r z \leq 0 \rightarrow z(z + r) \leq 0$ $z^r + r z + 1 \geq 0$ $(z+1)(z+r) \geq 0$ $z = -1, z = -r$ $Df = [-r, -1] \cup [-1, 0]$	الف	۸
$0 \leq \sqrt{1 - r z} \leq 1 \rightarrow 1 - r z \geq 0 \rightarrow z \leq \frac{1}{r}$ $1 - r z \leq 1 \rightarrow -r z \leq 0 \rightarrow z \geq 0$ $Df = \left[0, \frac{1}{r} \right]$	ب	
$z > 0 \mid 1 - \log_r z > 0 \rightarrow \log_r z < 1 \rightarrow z < r$ $Df = (0, r)$	الف	
$z > 0 \mid 1 - \log_{\frac{1}{r}} z > 0 \rightarrow \log_{\frac{1}{r}} z < 1$ $Df = \left(\frac{1}{r}, +\infty \right)$ $z > \frac{1}{r} \leftarrow z > \left(\frac{1}{r} \right)^1$	ب	۹
$r^r z - z^r - 1 \geq 0 \rightarrow r^{r z - z^r} \geq 1 \rightarrow r^{r z - z^r} \geq r^r$ $r z - z^r \geq r \rightarrow 0 \geq z^r - r z + r \rightarrow (z - r)(z - 1)$ $z = r, z = 1$ $Df = [1, r]$	الف	۱۰
$\frac{r z + \pi}{r z + \pi} = n \rightarrow n \in \mathbb{W} \rightarrow r z + \pi \neq 0 \rightarrow z \neq -\frac{\pi}{r}$ $\rightarrow r z + \pi = n(r z + \pi) \rightarrow z = \frac{r n - \pi}{r - r n}$ $P_f = \left\{ \frac{r n - \pi}{r - r n} \mid n \in \mathbb{W} \right\}$	ب	