

الف) $\neq 0$ $2x^3 + 3x^2 - 1x + 3 \neq 0$
جمع ضرایب صفر

$$\frac{2x^3 + 3x^2 - 1x + 3}{-(2x^3 + 3x^2)} \cdot \frac{x-1}{x^2 + dx + 3} \rightarrow (x-1)(2x^2 + dx + 3) \neq 0$$

$$\frac{dx^2 - 1x + 3}{-(2x^2 + 3x)} = \frac{-2x + 3}{-(-3x + 3)}$$

$$\frac{1}{-} : \frac{-d \pm \sqrt{2d - 4(2)(3)}}{2 \times 2} = \left\{ \begin{array}{l} -\frac{1}{4} \\ -3 \end{array} \right.$$

$$D_f = \mathbb{R} - \left\{ 1, -3, \frac{1}{4} \right\}$$

ب) $2+10 = 9+3 \rightarrow$

$$\frac{2x^3 + 9x^2 + 10x + 3}{-(2x^3 + 9x^2)} \cdot \frac{x+1}{x^2 + dx + 3} \rightarrow (x+1)(2x^2 + 7x + 3) \neq 0$$

$$\frac{7x^2 + 10x + 3}{-(7x^2 + 7x)} = \frac{3x + 3}{-(3x + 3)}$$

$$\frac{1}{-} : \frac{-d \pm \sqrt{7^2 - 4(2)(3)}}{2 \times 2} = \frac{-7 \pm d}{4} = \left\{ \begin{array}{l} -3 \\ -\frac{1}{4} \end{array} \right.$$

$$D_f = \mathbb{R} - \left\{ -1, -3, -\frac{1}{4} \right\}$$

الف) $\neq 0$ $x^3 - 2x^2 + 2x - 1$

$$\frac{x^3 - 2x^2 + 2x - 1}{-(x^3 - 2x^2)} \cdot \frac{x-1}{x^2 - x + 1}$$

$$\frac{-x^2 + 2x - 1}{-(-x^2 + x)} = \frac{-(x-1)}{-(-x+1)}$$

$$(x-1)(x^2 - x + 1) \neq 0$$

$$\Delta = (1)^2 - 4(1)(1) = -3 < 0$$

$$D_f = \mathbb{R} - \{1\}$$

ب) $\neq 0$ $\rightarrow$ $\sqrt{\frac{x+3}{(x-1)(x^2+x+1)}}$
همواره مثبت

$$\frac{x+3}{(x-1)(x^2+x+1)}$$

$$\frac{-3}{+ \frac{1}{-} - \frac{1}{+}}$$

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

① $x-1 \geq 0 \rightarrow x^2 - dx + d - 2x + d \neq 0$
 $x \geq 1$
 $x^2 - 7x + 10 \neq 0$
 $(x-2)(x-5) \neq 0$

② $x-1 < 0 \rightarrow x^2 + dx - d - 2x + d \neq 0$
 $x < 1$
 $x^2 + 3x \neq 0$
 $x(x+3) \neq 0$

$$D_f = \mathbb{R} - \{2, 5, 0, -3\}$$

$$\textcircled{1}, \textcircled{2} \rightarrow D_f = \mathbb{R} - \{2, 5, 0, -3\}$$

الف) $[-x] \geq 2 \rightarrow -x \geq 2 \rightarrow x \leq -2$

$$D_f = (-\infty, -2]$$

ب) $[x]^2 - 2[x] - 3 \neq 0$
 $1-3 = -2$

$$\frac{1}{-} \rightarrow \frac{-1}{-} = 1$$

$$[x] \neq -1 \rightarrow x \notin [-1, 0)$$

 $[x] \neq 3 \rightarrow x \notin [3, 4)$

$$D_f = \mathbb{R} - ([-1, 0) \cup [3, 4))$$

الف) $\left[x - \frac{1}{x}\right] + \left[x + \frac{1}{x}\right] \geq 1 \rightarrow 2\left[x + \frac{1}{x}\right] \geq 1 \rightarrow \left[x + \frac{1}{x}\right] \geq \frac{1}{2}$

$$\left[x + \frac{1}{x}\right] \geq 1 \rightarrow x + \frac{1}{x} \geq 1$$

$$x \geq \frac{1}{x} \rightarrow D_f = \left[\frac{1}{x}, +\infty\right)$$

ب) $\left[\frac{x - \frac{1}{x}}{a}\right] + \left[\frac{\frac{1}{x} - x}{-a}\right] \geq 0$

$$\begin{cases} a \in \mathbb{Z} \rightarrow 0 \\ a \notin \mathbb{Z} \rightarrow -1 \end{cases}$$

$$x - \frac{1}{x} \in \mathbb{Z}$$

$$x \in \mathbb{Z} + \frac{1}{x}$$

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

الف) $\cos x \neq 0$ $\tan x$ تعریف می نشود $\tan x + 1 \neq 0$ $\tan x \neq -1$ $D_f = \mathbb{R} - \left\{ \frac{k\pi}{2}, k\pi - \frac{\pi}{4} \right\}$ (سوال ۲)

ب) $1 - 2\sin^2 x \geq 0 \rightarrow \sin^2 x \leq \frac{1}{2} \quad -\frac{1}{\sqrt{2}} \leq \sin x \leq \frac{1}{\sqrt{2}}$ $D_f = \left[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right]$ (۲)

الف) $2\sin x - 1 \geq 0 \quad \sin x \geq \frac{1}{2}$ $D_f = \left[2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6} \right]$ (سوال ۷)

ب) $1 - 2\cos x \geq 0 \quad \cos x \leq \frac{1}{2}$ $D_f = \left[2k\pi + \frac{\pi}{3}, 2k\pi + \frac{5\pi}{3} \right] \propto 2k\pi + \frac{2\pi}{3}$
 به انتهای بازه بنویس از ابتدای بازه کم می شود!

الف) $\frac{-1 \leq x^2 + 2x + 1 \leq 1}{\textcircled{1}}$

① $x^2 + 2x + 2 \geq 0 \rightarrow \frac{-1}{-2}$
 $a+c=b$

⑤ $x^2 + 2x \leq 0$

$\frac{-2}{+} \quad \frac{-1}{-} \quad +$

$\frac{-2}{+} \quad \frac{-1}{-} \quad +$

① و ⑤ :

$D_f = [-2, -1] \cup [-1, 0]$

ب) $-1 \leq \sqrt{a-2x} \leq 1 \quad a-2x \leq 1 \rightarrow x \geq \frac{a-1}{2}$ $D_f = [2, \infty)$

زیر رادیکال باید نامنفی باشد $a-2x \geq 0 \rightarrow x \leq \frac{a}{2}$ $D_f = \left[2, \frac{a}{2} \right]$

الف) ① $x > 0$ ② $1 - \log_2 x > 0 \quad \log_2 x < 1 \quad x < 2$

① و ② $\Rightarrow D_f = (0, 2)$

ب) ① $x > 0$ ② $1 - \log_{\frac{1}{2}} x > 0 \rightarrow \log_{\frac{1}{2}} x < 1 \quad x < \frac{1}{2}$

① و ② $\Rightarrow D_f = (0, \frac{1}{2})$
 متغیرین ۰ و ۱ است پس جهت نامعادله عوض می شود!
 $\log_{\frac{1}{2}} x < 1 \rightarrow x > \frac{1}{2} \rightarrow D_f = (\frac{1}{2}, +\infty)$

الف) $2^{x-x^2} \geq 2^x \quad x-x^2 \geq x \rightarrow x^2 - 4x + 3 \leq 0$

($x-x^2 \geq \log_2 2 = 1$) (یا، واقع)

$a+b+c=0 \rightarrow \frac{1}{3}$

$\frac{1}{+} \quad \frac{3}{-} \quad +$

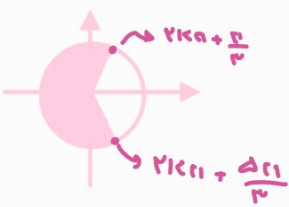
$D_f = [1, 3]$

ب) $\frac{2n+d}{2n+4} \in \mathbb{W}$

$x = -\frac{4w-d}{2w-2}$

$D_f = \left\{ x \mid x = \frac{d-4k}{2k-2}, k \in \mathbb{W} \right\}$

$v - \text{ب}) \quad 1 - r \cos n \geq 0 \rightarrow \cos n \leq \frac{1}{r} \rightarrow Df_c \left[r \cos n + \frac{\pi}{r}, r \cos n + \frac{\pi}{r} \right]$



$\wedge - \text{ب}) \quad \sqrt{\omega - r n} \rightarrow \omega - r n \geq 0 \rightarrow n \leq \frac{\omega}{r}$
 $\underbrace{-1 \leq \sqrt{\omega - r n} \leq 1}_{\text{همواره برقرار است}} \rightarrow \omega - r n \leq 1 \rightarrow -r n \leq -\omega + 1 \rightarrow n \geq \frac{\omega - 1}{r}$
 $\rightarrow Df_c \left[\frac{\omega - 1}{r}, \frac{\omega}{r} \right]$

$9 - \text{ب}) \quad y = \log_r \left(1 - \log \frac{n}{r} \right) \rightarrow \log \frac{n}{r} \rightarrow n > 0$
 $\hookrightarrow 1 - \log \frac{n}{r} > 0 \rightarrow \log \frac{n}{r} < 1 \xrightarrow{\text{مناسب} \begin{pmatrix} 1 \\ 0 \end{pmatrix}} n > \frac{1}{r}$
 $Df_c \left(\frac{1}{r}, +\infty \right)$