

$(a-2)x^2 + ax + b \geq 0$

$$\begin{cases} 2-a > 0 \rightarrow a < 2 \\ 2-a = 0 \rightarrow a = 2 \text{ و } b = -4 \\ 2-a < 0 \rightarrow a > 2 \end{cases}$$
 در این حالت برای $a > 2$ باید $b \geq 4a - 4$ باشد.

$$b = 11 - 12a$$

$$11 - 12a \geq 4a - 4 \Rightarrow 15 \geq 16a \Rightarrow a \leq \frac{15}{16}$$
 اما $a > 2$ و $a \leq \frac{15}{16}$ نمی‌تواند برقرار باشد.

$$a = 2 \Rightarrow b = -4$$

$x^2 + 2x + 2 - m^2 = (x+1)^2 + (1-m^2) \geq 0 \Rightarrow m^2 \leq 1 \Rightarrow -1 \leq m \leq 1$

$x^2 \geq 0 \Rightarrow x \in \mathbb{R}$

$$x^2 \leq 4 \Rightarrow -2 \leq x \leq 2$$
 بررسی می‌کنیم:

$$[x] + [-x] + 1 \neq 0$$
 اگر x صحیح باشد: $0 + 1 = 1 \neq 0$
 اگر x صحیح نباشد: $-1 + 1 = 0$
 پس x باید صحیح باشد.

$$D_f = \{ \dots \}$$

الف) $x^3 + 3x^2 \geq 0 \Rightarrow x^2(x+3) \geq 0 \Rightarrow x \neq 0 \text{ و } x \geq -3$

$$D_f = (-\infty, -3] \cup (0, \infty)$$
 ب) $x^3 - 1 \neq 0 \Rightarrow x \neq 1$
 بررسی می‌کنیم:

$$\frac{(x-1)(x+1) \cdot x^2(x-3)}{(x-1)(x^2+x+1)} = \frac{x^2(x-3)}{x^2+x+1}$$
 مخرج همیشه مثبت است.

$$x^2(x-3) \geq 0 \Rightarrow x \leq -3 \text{ یا } x \geq 0$$

$$D_f = (-\infty, -3] \cup [0, \infty)$$

الف) $|x-2| \geq 0$ همیشه برقرار است.
 ب) $|x-2| \geq 4 \Rightarrow x \leq -2 \text{ یا } x \geq 6$

$$D_f = (-\infty, -2] \cup [6, \infty)$$

الف) $1 - x|x| \geq 0$

$$\begin{cases} 1) |x| = x \rightarrow x \leq 1 \\ 2) |x| = -x \rightarrow x \geq 0 \end{cases}$$

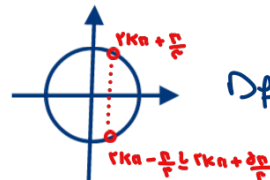
$$D_f = (-\infty, 1]$$

$3|x-5| \geq 0 \Rightarrow |x-5| \leq 3 \Rightarrow 2 \leq x \leq 8$

$$D_f = [2, 8]$$

$$y = \frac{C \cdot \sin}{r \cdot \sin - 1} \rightarrow r \cdot \sin - 1 \neq 0 \rightarrow \sin \neq \frac{1}{r}$$

$$D_f = \mathbb{R} - \left\{ rkn \pm \frac{\pi}{r} \right\}$$



$$\text{الف) } \cos x \neq 0 \rightarrow D_f = \left\{ x \neq \frac{\pi}{2} + k\pi, k \in \mathbb{Z} \right\}$$

$$\text{ب) } \tan x \neq 1 \Rightarrow \frac{\sin x}{\cos x} \neq 1 \Rightarrow \frac{\sin x - \cos x}{\cos x} \Rightarrow y = \frac{\cos x}{\frac{\sin x - \cos x}{\cos x}} = \frac{\cos \cdot \cos}{\sin x - \cos x} = \frac{\cos^2 x}{\sin x - \cos x}$$

$$\sin x - \cos x \neq 0 \rightarrow \sin \neq \cos \Rightarrow \tan x \neq 1 \rightarrow D_f = \left\{ x \neq \frac{\pi}{4} + k\pi, x \neq \frac{5\pi}{4} + k\pi \right\}$$

$$\text{الف) } |2x+1| - |x+3| \neq 0 \rightarrow |2x+1| \neq |x+3| \xrightarrow{\text{مفرد همنوعی شود}} x = 2, -\frac{4}{3}$$

$$D_f = \mathbb{R} - \left\{ 2, -\frac{4}{3} \right\}$$

$$\text{ب) } |2x+1| - |x+3| \geq 0 \rightarrow |2x+1| \geq |x+3| \xrightarrow{\text{مفرد همنوعی شود}} x = 2, -\frac{4}{3} \rightarrow D_f = (-\infty, -\frac{4}{3}] \cup [2, +\infty)$$

$$1: 2x-1 > 0 \Rightarrow x > \frac{1}{2}$$

$$2: \log_0^{(2x-1)} > 0 \Rightarrow 2x-1 > 1 \Rightarrow 2x > 2 \Rightarrow x > 1$$

$$3: \log_0^{(2x-1)} < 0 \Rightarrow 2x-1 < 1 \Rightarrow 2x < 2 \Rightarrow x < 1$$

$$D_f = (1, 3]$$

$$\text{الف) } 2\cos x + 1 > 0 \rightarrow 2\cos x > -1 \rightarrow \cos x > -\frac{1}{2} \Rightarrow D_f = \left[-\frac{\pi}{3} + 2k\pi, \frac{\pi}{3} + 2k\pi \right) \cup \left(\frac{5\pi}{3} + 2k\pi, \frac{7\pi}{3} + 2k\pi \right)$$

$$\text{ب) } \rightarrow D_f = (-\infty, -1)$$

$$x \neq 1, -1 \left\{ \begin{array}{l} x > 1 \\ x < -1 \end{array} \right.$$

$$\frac{x-1}{x+1} \geq 1 \rightarrow \frac{x-1-(x+1)}{x+1} \geq 0 \rightarrow \frac{-2}{x+1} \geq 0 \rightarrow x < -1$$

$$4- \text{الف}) \quad n^3 + 3n^2 \geq 0 \rightarrow n^2(n+3) \geq 0 \rightarrow \frac{-3 \quad *}{- \quad + \quad +} \rightarrow D_f = [-3, +\infty)$$

$$4- \text{ب}) \quad \frac{(n^2-1)(n^3-3n^2)}{(n^2-1)} \geq 0 \rightarrow \frac{(n-1)(n+1)(n^2)(n-3)}{(n-1)(n^2+n+1)} \geq 0 \quad \frac{-1 \quad * \quad * \quad 3}{+ \quad - \quad - \quad +}$$

$D_f = (-\infty, -1] \cup \{0\} \cup [3, +\infty)$ بسته به علامت

$$5- \text{الف}) \quad |n-2| - 3 \geq 0 \rightarrow |n-2| \geq 3 \quad \begin{array}{l} \rightarrow n-2 \geq 3 \rightarrow n \geq 5 \\ \rightarrow n-2 \leq -3 \rightarrow n \leq -1 \end{array} \rightarrow D_f = (-\infty, -1] \cup [5, +\infty)$$
