

$(a-2) \neq 0 \Rightarrow$ درجه ۲ باشد. $\begin{cases} x=2 \Rightarrow 9a+11+2a+b=0 \Rightarrow 11a+b-11=0 \Rightarrow b=11-11a & (1) \\ \Delta=0 \Rightarrow a^2-4(a-2)(b)=0 \Rightarrow a^2-4ab+11b=0 & (2) \end{cases}$
 $(1), (2) \Rightarrow a^2-4a(11-11a)+11(11-11a)=0 \Rightarrow 49a^2-161a+144=0 \Rightarrow (7a-12)^2=0 \Rightarrow$
 $a=\frac{12}{7} \Rightarrow b=-\frac{11}{7} \rightarrow f(x)=\sqrt{\frac{2}{7}x^2+\frac{12}{7}x-\frac{11}{7}}=\sqrt{\frac{2}{7}(x^2-6x+9)}=\sqrt{\frac{2}{7}(x-3)^2} \rightarrow D_f=\{x \mid x \neq 3\}$
 $a-2=0 \Rightarrow a=2 \rightarrow f(x)=\sqrt{2x+b} \rightarrow x=3 \Rightarrow \sqrt{6+b}=0 \Rightarrow 6+b=0 \Rightarrow b=-6$

$x^2+1x+1-m^2 \geq 0 \Rightarrow (x+1)^2+1-m^2 \geq 0 \Rightarrow 1-m^2 \geq 0 \Rightarrow m^2 \leq 1 \Rightarrow$
 $-1 \leq m \leq 1 \begin{cases} \min: -1 \\ \max: 1 \end{cases} \quad \max - \min = 1 - (-1) = 2$

برای اینکه نموج تعریف شده x نباید هیچ اعشاری داشته باشد، چون اگر اعشار داشت نموج صفری شده پس x باید کاملاً رند باشد یا به عبارتی دیگر $x \in \mathbb{Z}$ است.

$\sqrt{4-x^2} \rightarrow 4-x^2 \geq 0 \Rightarrow x^2 \leq 4 \Rightarrow -2 \leq x \leq 2 \Rightarrow D_f = \{-2, -1, 0, 1, 2\}$

الف) $x^3+3x^2 \geq 0 \Rightarrow x^2(x+3) \geq 0 \Rightarrow x \geq -3 \Rightarrow D_f = [-3, +\infty)$

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

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

الف) $|x-2|-3 \geq 0 \Rightarrow |x-2| \geq 3 \begin{cases} x \geq 5 \\ x \leq -1 \end{cases} \rightarrow D_f = \mathbb{R} - (-1, 5)$

ب) $|4-12-x| \geq 0 \Rightarrow |2-x| \leq 2 \Rightarrow x \geq -2 \rightarrow D_f = [-2, 6]$

$$الف) |x| > 0 \Rightarrow x > 0 \Rightarrow x < 1 \Rightarrow D_f = (-\infty, 1]$$

$$ب) \sqrt{3-|x-5|} - 1 \neq 0 \Rightarrow \sqrt{3-|x-5|} \neq 1 \Rightarrow 3-|x-5| \neq 1 \Rightarrow -|x-5| \neq -2 \Rightarrow |x-5| \neq 2$$

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

$$D_f = [2, 3) \cup (7, 8]$$

$$الف) \cos x \neq 0 \rightarrow D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{2}\}$$

$$ب) |\cos x - 1| \neq 0 \Rightarrow \cos x \neq 1 \Rightarrow \cos x \neq \frac{1}{1} \rightarrow D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{2}\}$$

$$الف) ||x+1| - |x+3|| \neq 0 \Rightarrow |x+1| \neq |x+3| \Rightarrow (x+1)^2 \neq (x+3)^2 \Rightarrow$$

$$x^2 + 2x + 1 \neq x^2 + 6x + 9 \Rightarrow 2x + 1 \neq 6x + 9 \Rightarrow -4x \neq 8 \Rightarrow x \neq -2$$

$$ب) ||x+1| - |x+3|| \geq 0 \Rightarrow |x+1| \geq |x+3| \Rightarrow (x+1)^2 \geq (x+3)^2 \Rightarrow$$

$$x^2 + 2x + 1 \geq x^2 + 6x + 9 \Rightarrow -4x \geq 8 \Rightarrow x \leq -2$$

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

$$|x-1| > 0 \Rightarrow x > 1 \quad (I) \quad \log_{\Delta} |x-1| > 0 \Rightarrow |x-1| > 1 \Rightarrow x > 2 \quad (II)$$

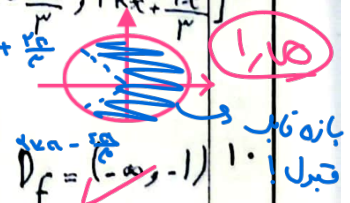
$$\log_{\Delta} \log_{\Delta} |x-1| \geq 0 \Rightarrow \log_{\Delta} |x-1| \leq 1 \Rightarrow |x-1| \leq \Delta \Rightarrow x \leq 3 \quad (III)$$

$$D_f = (I) \cap (II) \cap (III) = (2, 3]$$

$$الف) |\cos x + 1| > 0 \Rightarrow \cos x > -1 \Rightarrow \cos x > -\frac{1}{1} \Rightarrow D_f = \mathbb{R} - [2k\pi - \frac{\pi}{2}, 2k\pi + \frac{\pi}{2}]$$

$$ب) \frac{x-1}{x+1} > 0 \Rightarrow \frac{-\infty}{+} \mid \frac{-}{-} \mid \frac{+}{+} \Rightarrow (-\infty, -1) \cup (1, +\infty)$$

$$\log \frac{x-1}{x+1} \geq 0 \Rightarrow \frac{x-1}{x+1} \geq 1 \Rightarrow \frac{x-1}{x+1} - 1 \geq 0 \Rightarrow \frac{-2}{x+1} \geq 0 \Rightarrow x < -1$$



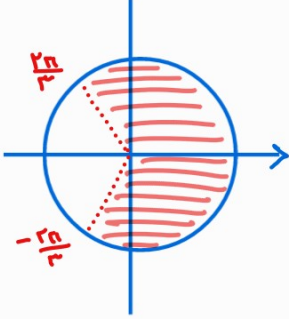
ج- ٤) $\frac{(n^2-1)(n^2-n^2)}{(n^2-1)} \geq 0 \rightarrow \frac{(n-1)(n+1)(n^2)(n-1)}{(n-1)(n^2+n+1)} \geq 0$

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

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الف - ١) $2C \cdot \sin + 1 > 0 \rightarrow C \cdot \sin > -\frac{1}{2}$



$D_f = (2k\pi - \frac{\pi}{6}, 2k\pi + \frac{\pi}{6})$