

الف) $\frac{n^2 + n - 1}{n^2 + n} \cdot \frac{n-1}{n^2 + n - 1} \rightarrow \frac{n-1}{n^2 + n - 1} \neq 0 \rightarrow n \neq 1, -2, \frac{1}{2}$

ب) $\frac{n^2 + 4n + 10}{n^2 + 4n + 10} \cdot \frac{n+1}{n^2 + 4n + 10} \rightarrow \frac{n+1}{n^2 + 4n + 10} \neq 0 \rightarrow n \neq -1, -5, -\frac{1}{4}$

ج) $\frac{n^2 - n}{n^2 + n} \cdot \frac{n-1}{n^2 + n - 1} \rightarrow \frac{n-1}{n^2 + n - 1} \neq 0 \rightarrow n \neq 1, -2, \frac{1}{2}$

الف) $\frac{n^2 - n + n - 1}{n^2 - n + n - 1} \cdot \frac{n-1}{n^2 - n + n - 1} \rightarrow \frac{n-1}{n^2 - n + n - 1} \neq 0 \rightarrow n \neq 1$

ب) $\frac{n^2}{(n-1)(n^2 - n + 1)} \geq 0 \rightarrow \frac{n^2}{(n-1)(n^2 - n + 1)} \geq 0 \rightarrow (-\infty, -1) \cup (1, +\infty)$

① if $n \geq 1 \rightarrow n-1 = n-1 \rightarrow n^2 - 2n - 1 = n^2 - 2n - 1 \rightarrow (n-1)/(n-1)$

$\rightarrow n \neq 1, 2$ ② if $n < 1 \rightarrow n-1 = 1-n \rightarrow n^2 - 2n - 1 = n^2 - 2n - 1 \rightarrow n^2 + n$

$\rightarrow n(n+1) \neq 0 \rightarrow n \neq 0, -1 \Rightarrow n \neq 1, 2, 0, -1$

الف) $[-n] - 1 \geq 0 \rightarrow [-n] \geq 1 \rightarrow n \leq -1$

ب) $[n] = t \rightarrow t - 1 \neq 0 \rightarrow (t-1)(t+1) \neq 0 \rightarrow t \neq 1, -1 \rightarrow \begin{cases} [n] = t \rightarrow [5, 6] \\ [-1] = [n] \rightarrow [-1, 0] \end{cases} \rightarrow \mathbb{R} - ([1, 0) \cup [5, 6])$

الف) $[n - \frac{1}{2}] + [n + \frac{1}{2}] \geq 0 \rightarrow [n - \frac{1}{2}] + [n + \frac{1}{2}] \geq 0 \rightarrow 2[n + \frac{1}{2}] - 1 \geq 0$

$\rightarrow [n + \frac{1}{2}] \geq \frac{1}{2} \rightarrow n \geq \frac{1}{2}$

ب) $[n - \frac{1}{2}] \leq [n + \frac{1}{2}] \geq 0 \rightarrow [n - \frac{1}{2}] + [n + \frac{1}{2}] \geq 0 \rightarrow \begin{cases} [n] = [n] \rightarrow n \in \mathbb{Z} \rightarrow 0 \\ [n] + [n] \rightarrow n \notin \mathbb{Z} \rightarrow -1 \end{cases}$

$\rightarrow \{n | n = k + \frac{1}{2}, k \in \mathbb{Z}\}$

الف) $\tan n + 1 \neq 0 \rightarrow \tan n \neq -1 \rightarrow IR - \left\{ K\pi + \frac{3\pi}{4} \right\}$ 9
 ب) $\tan \frac{1}{2} n \rightarrow n \neq \frac{ka}{\frac{1}{2}} \rightarrow n \neq 2ka$ 120

الف) $1 - \sin n > 0 \rightarrow \sin n < 1 \rightarrow \sin n < \frac{1}{2} \rightarrow \left(K\pi + \frac{\pi}{6}, K\pi + \frac{5\pi}{6} \right)$ 150
 ب) $1 - \cos n > 0 \rightarrow \cos n < 1 \rightarrow \cos n < \frac{1}{2} \rightarrow \left(K\pi + \frac{\pi}{3}, K\pi + \frac{5\pi}{3} \right)$

الف) $1 - \sin n > 0 \rightarrow \sin n < 1 \rightarrow \left(2K\pi + \frac{\pi}{6}, 2K\pi + \frac{5\pi}{6} \right)$ 17
 ب) $1 - \cos n > 0 \rightarrow \cos n < 1 \rightarrow \left(2K\pi + \frac{\pi}{3}, 2K\pi + \frac{5\pi}{3} \right)$ 18

الف) $n^2 + m^2 > 1 \rightarrow n^2 + m^2 > 0 \rightarrow n^2 + m^2 > 1 \rightarrow \frac{-1 \pm \sqrt{1-4}}{2} \rightarrow \left(-\frac{1}{2}, \frac{1}{2} \right)$ 19
 ب) $n^2 + m^2 > 1 \rightarrow n^2 + m^2 > 0 \rightarrow (n+1)(n+1) > 0 \rightarrow \frac{-1 \pm \sqrt{1-4}}{2} \rightarrow \left(-\frac{1}{2}, \frac{1}{2} \right) \cup \left(\frac{1}{2}, \frac{3}{2} \right) \cup \left(\frac{3}{2}, \frac{5}{2} \right) \cup \dots$

الف) $n > 0 \rightarrow 1 - \log n > 0 \rightarrow \log n < 1 \rightarrow n < 10$ 20
 ب) $n > 0 \rightarrow 1 - \log n > 0 \rightarrow \log n < 1 \rightarrow n < 10$ 110
 متناهی و اولیت پس صحت نامحدود بودن برقرار است $D_p = \left(\frac{1}{p} + \infty \right)$

الف) $n^2 - n^2 > 0 \rightarrow 2 > 1 \rightarrow 2n - n^2 > 0 \rightarrow n^2 - 2n < 0 \rightarrow (n-2)(n-1) < 0 \rightarrow \left(1, 2 \right)$ 21

الف) $\frac{n+1}{n+2} \in W \rightarrow (Wn+1) - (Wn+2) = 1 \rightarrow Wn+1 - Wn-2 = 1 \rightarrow W-1 = 1 \rightarrow W = 2$ 22
 ب) $\frac{n+1}{n+2} \in W \rightarrow (Wn+1) - (Wn+2) = 1 \rightarrow Wn+1 - Wn-2 = 1 \rightarrow W-1 = 1 \rightarrow W = 2$

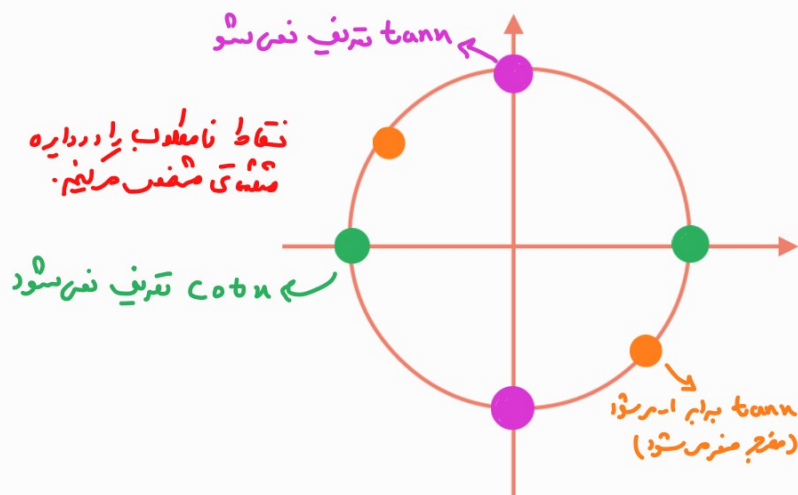
4- الف) $y = \frac{\cot x + 1}{\tan x + 1}$

$x \neq k\pi + \frac{\pi}{2}$

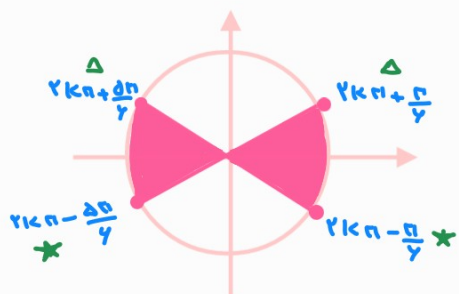
$x \neq k\pi + \frac{\pi}{4} \cup x \neq k\pi$

$\rightarrow x \neq \frac{k\pi}{4}$

$\rightarrow D_f = \mathbb{R} - \left\{ \frac{k\pi}{4}, k\pi + \frac{\pi}{2} \right\}$



4- ب) $1 - 4\sin^2 x \geq 0 \rightarrow 4\sin^2 x \leq 1 \rightarrow \sin^2 x \leq \frac{1}{4} \rightarrow -\frac{1}{2} \leq \sin x \leq \frac{1}{2}$



$\rightarrow D_f = \left[k\pi + \frac{5\pi}{6}, k\pi + \frac{2\pi}{3} \right] \cup \left[k\pi + \frac{7\pi}{6}, k\pi + \frac{4\pi}{3} \right]$

4- ب) $y = \log_2 (1 - \log_2 \frac{1}{x}) \rightarrow \log_2 \frac{1}{x} \rightarrow x > 0$

$\rightarrow 1 - \log_2 \frac{1}{x} > 0 \rightarrow \log_2 \frac{1}{x} < 1 \xrightarrow{\text{منابین (۱ و ۲)}} x > \frac{1}{2}$

$D_f = \left(\frac{1}{2}, +\infty \right)$