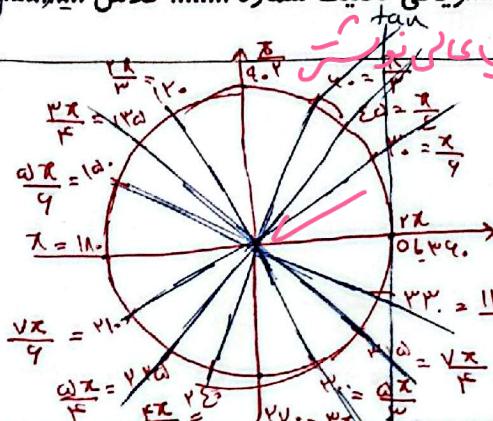




$\tan 0 = 0$	$\tan \frac{\pi}{6} = \frac{\sqrt{3}}{3}$	$\tan \frac{\pi}{4} = 1$	$\tan \frac{\pi}{3} = \sqrt{3}$	$\tan \frac{\pi}{2}$ تعریف نشده
$\tan \frac{2\pi}{3} = -\sqrt{3}$	$\tan \frac{3\pi}{4} = -1$	$\tan \pi = 0$	$\tan \frac{5\pi}{4} = 1$	$\tan \frac{3\pi}{2}$ تعریف نشده
$\tan \frac{4\pi}{3} = \sqrt{3}$	$\tan \frac{5\pi}{6} = \frac{\sqrt{3}}{3}$	$\tan \frac{7\pi}{6} = -\frac{\sqrt{3}}{3}$	$\tan \frac{5\pi}{3} = -\sqrt{3}$	$\tan 2\pi = 0$

الف $\rightarrow \sin \frac{\pi}{4} + \cos \frac{\pi}{4} + 2 \tan \frac{\pi}{4} = \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}} + 2(1) = \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}} + 2 = \frac{2}{\sqrt{2}} + 2 = \sqrt{2} + 2$

ب $\rightarrow -\cos \frac{\pi}{4} + \sin \frac{\pi}{4} - 3 \sin \frac{\pi}{4} = -\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} - 3 \frac{\sqrt{2}}{2} = -\frac{2\sqrt{2}}{2} = -\sqrt{2}$

ج $\rightarrow \cos(\sin \frac{\pi}{4}) + \sin(\cos \frac{\pi}{4}) = \cos(\frac{\sqrt{2}}{2}) + \sin(\frac{\sqrt{2}}{2})$

$x = a \rightarrow a^r + \epsilon a = \epsilon a + a + r$
 $a^r + \epsilon a = \epsilon a + r$
 $a^r + a - r = 0$
 $(a+r)(a-r) = 0$
 $a = -r$
 $a = +r$

$f(n) = \begin{cases} n^r + \epsilon n & n \geq 1 \\ \epsilon n + \epsilon^2 & n \leq 1 \end{cases}$
 $f(1) = 1^r + \epsilon(1) = 1 + \epsilon$

$|n+1| \geq 2 \rightarrow n+1 \geq 2 \rightarrow n \geq 1$
 $n+1 \leq -2 \rightarrow n \leq -3$

$n = -3 \rightarrow 1n - b = a - \epsilon$
 $\epsilon - b = a$
 $a + b \rightarrow \epsilon - b + b = \epsilon$

الف $\rightarrow y = \frac{1}{x^r - \epsilon n^r} = \frac{1}{x^r(n - \epsilon)}$
 $x = 0 \rightarrow n = \epsilon$

ب $\rightarrow y = \frac{1}{r n^r + \epsilon n^r + r n + \epsilon}$
 $r n^r + \epsilon n^r + r n + \epsilon = (r n + \epsilon)(n^r + 1)$
 $r n + \epsilon = 0 \rightarrow n = -\frac{\epsilon}{r}$

الف $\rightarrow \begin{cases} n^2 - 1 \geq 0 \\ n^2 \geq 1 \end{cases} \rightarrow \begin{cases} n \geq 1 \\ n \leq -1 \end{cases} \rightarrow \text{استنتاج} \rightarrow D_f = [1, +\infty)$

$n - 2 \geq 0 \rightarrow n \geq 2$

ب $\rightarrow \begin{cases} 9 - 3n \geq 0 \\ 9 \geq 3n \\ 3n - 3 \geq 0 \\ 3n \geq 3 \end{cases} \rightarrow \begin{cases} n \leq 3 \\ n \geq 1 \end{cases} \rightarrow \text{استنتاج} \rightarrow D_f = \left(\frac{1}{3}, 3\right]$

$4n - a \geq 0$
 $4n \geq a$
 $n \geq \frac{a}{4}$

$b - 3n \geq 0$
 $b \geq 3n$
 $\frac{b}{3} \geq n$

$\frac{b}{3} = 2 \rightarrow b = 6$

$\frac{a}{4} = 2 \rightarrow a = 8$

$\frac{b}{a} = \frac{6}{8} = \frac{3}{4}$

الف $= y = \sqrt{\frac{(n-3)(n+3)}{(n^2-9)(n^2-9)}}$

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

ب $= y = \sqrt{\frac{(n-1)(n-3)(n+3)}{(n-2)(n+1)(n+3)}}$

$D_f = \mathbb{R} \setminus (-\infty, -3) \cup [-2, -1) \cup [1, 3) \cup [3, +\infty)$

الف $\rightarrow 2[n] - \varepsilon \geq 0 \rightarrow 2[n] \geq \varepsilon$
 $[n] \geq 2 \rightarrow D_f = [2, +\infty)$

ب $\rightarrow 2[n] - \omega \geq 0$
 $2[n] \geq \omega$
 $[n] \geq \frac{\omega}{2} \rightarrow D_f = \left[\frac{\omega}{2}, +\infty\right)$

الف $\rightarrow y = \sqrt{\frac{(n+1)}{(n-3)}} + \sqrt{\frac{(4-n)}{(n-3)}}$

ب $\rightarrow [n] - \varepsilon \geq 0$
 $[n] \geq \varepsilon \rightarrow [\varepsilon, +\infty)$

$2[n] \geq 0$
 $2 \geq [n] \rightarrow (-\infty, 3)$

$D_f = \emptyset$