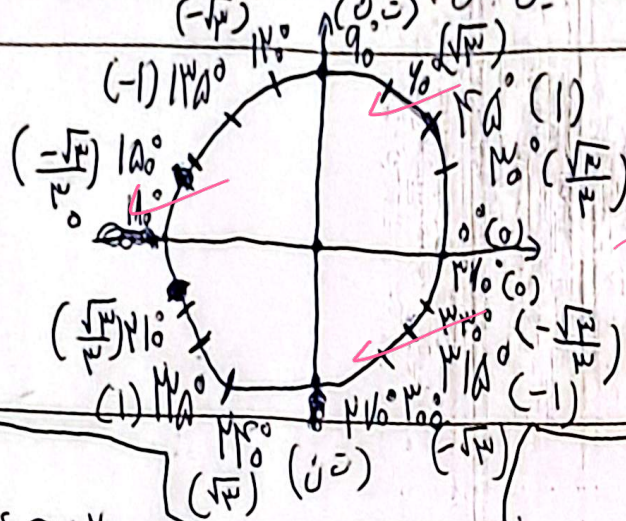


نام و نام خانوادگی: ... شماره: ... کلاس: ...



1

$$\sin \frac{\pi}{4} + \cos \frac{\pi}{4} + \tan \frac{\pi}{4} = \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}} + 1 = \frac{2}{\sqrt{2}} + 1 = \sqrt{2} + 1$$

$$2) \cot \frac{\pi}{3} + \cot \frac{\pi}{4} - \tan \frac{\pi}{6} = \frac{1}{\sqrt{3}} + 1 - \frac{1}{\sqrt{3}} = 1$$

$$3) \cos(\sin \frac{\pi}{4}) + \sin(\pi \cos \frac{\pi}{4}) = \cos(\frac{1}{\sqrt{2}}) + \sin(\frac{\pi}{\sqrt{2}})$$

$$f_1 = (1)^n + 1 = 2$$

$$a^n + 1 = 2 \Rightarrow a^n = 1 \Rightarrow a = 1$$

$$f(n) = \begin{cases} n^2 - b & |n+1| \geq 1 \\ a + n & -1 \leq n \leq 1 \end{cases}$$

$$n^2 - b = a - 1 \Rightarrow a + b = n^2 + 1$$

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

$$y = \frac{1}{n^2 + n^2 + n + 1} = \frac{1}{n^2(n+1) + (n+1)} = \frac{1}{(n+1)(n^2 + 1)}$$

الف) $y = \sqrt{m^2 - 1} + \sqrt{m - 1}$ $[1, +\infty) \cup (-\infty, -1]$
 $m^2 - 1 \geq 0 \Rightarrow (m-1)(m+1) \geq 0$
 $D_f = [1, +\infty) \cup (-\infty, -1] \cap [1, +\infty) = [1, +\infty)$

ب) $y = \frac{\sqrt{4 - 3m}}{\sqrt{4m - 3}}$ $(\frac{1}{4}, +\infty) \cup (-\infty, \frac{4}{3}]$
 $4 - 3m \geq 0 \Rightarrow m \leq \frac{4}{3}$
 $4m - 3 > 0 \Rightarrow m > \frac{3}{4}$
 $D_f = (\frac{3}{4}, \frac{4}{3}]$

$y = \sqrt{4m - a} + \sqrt{b - 3m} \Rightarrow b \geq 3m, a \leq 4m$
 $(-\infty, \frac{b}{3}] \cap [\frac{a}{4}, +\infty) = \{m\}$
 $\Rightarrow \frac{b}{3} = \frac{a}{4} = m$
 $\frac{b}{a} = \frac{3}{4} \Rightarrow \frac{b}{a} = \frac{3}{4}$

الف) $y = \sqrt{\frac{m^2 - m - 4}{m^2 - 13m^2 + 34}} = \sqrt{\frac{(m-4)(m+1)}{(m-1)(m+1)(m-3)(m+4)}}$
 $D_f = (-\infty, -4) \cup (1, 3) \cup (3, +\infty)$

ب) $y = \sqrt{\frac{m^3 - 2m^2 - 4m + 4}{m^4 + 2m^3 - 4m - 4}} = \sqrt{\frac{(m-1)(m-3)(m+1)}{(m+1)(m+2)(m+1)}}$
 $D_f = (-\infty, -3) \cup [-1, 1) \cup [3, +\infty)$

الف) $y = \sqrt{2[m] - 4} \Rightarrow 2[m] \geq 4 \Rightarrow [m] \geq 2$
 $\Rightarrow m \geq 2$
 $D_f = [2, +\infty)$

ب) $y = \sqrt{2[m] - 4} \Rightarrow 2[m] \geq 4 \Rightarrow [m] \geq 2$
 $\Rightarrow m \geq 2$
 $D_f = [2, +\infty)$

الف) $y = \sqrt{\frac{x+1}{x-3}} + \sqrt{\frac{4-x}{x^2+m^2+m+5}}$
 $x-3 > 0 \Rightarrow x > 3$
 $4-x \geq 0 \Rightarrow x \leq 4$
 $D_f = (3, 4]$

ب) $y = \sqrt{[m] - 4} + \sqrt{4 - [m]}$
 $[m] \geq 4$
 $[m] \leq 4$
 $D_f = [4, 4] = \{4\}$

ب-۱۰) $y = \sqrt{[n]-4} + \sqrt{2-[n]}$

I و II $\rightarrow D_f = \emptyset$ همه عددی نداریم نه از ۴ بزرگتر و ۳ کمتر باشند

$$\begin{cases} [n]-4 \geq 0 \rightarrow n \geq 4 \text{ I} \\ \quad \hookrightarrow [n] \geq 4 \\ [n]-2 \leq 0 \rightarrow n \leq 2 \text{ II} \\ \quad \hookrightarrow [n] \leq 2 \end{cases}$$