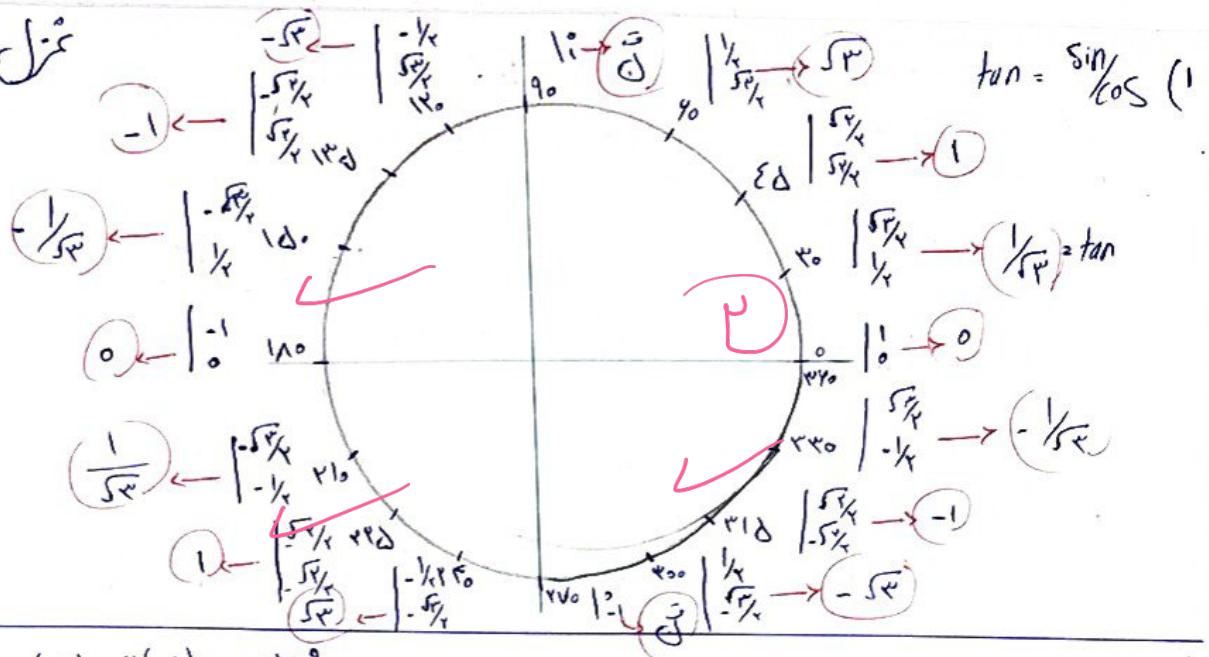


٢. افترض

نمذله رسميني



الف) $\frac{1}{4} + (-1) + 2(-1) = -\frac{5}{4}$

ب) $\frac{\sqrt{3}}{4} + \frac{\sqrt{3}}{4} - 2(-\frac{\sqrt{3}}{4}) = \frac{3\sqrt{3}}{2}$

ج) $-\frac{1}{\sqrt{2}} + 3 \times (\frac{1}{\sqrt{2}}) - 2 \times (-\frac{1}{\sqrt{2}}) = \frac{3}{\sqrt{2}}$

د) $\cos(\sin \pi) + \sin(\pi \cos \frac{\pi}{4}) = \cos 0 + \sin \pi = 1 + 0 = 1$

$f(a) = \begin{cases} a^2 + \epsilon a & a > a \\ a^2 + a + \epsilon & a < a \end{cases}$

$a^2 + \epsilon a = a^2 + a + \epsilon$

$a^2 + a - \epsilon = 0$

$(a + \epsilon)(a - 1) = 0$

$a = 1$

$a = -\epsilon$

$f(1) \rightarrow 1 + \epsilon(1) = 1 + \epsilon$

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

$1a - b = a - \epsilon$

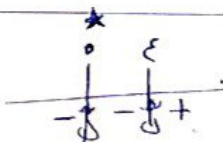
$a + b = a + \epsilon$

الف) $y = \frac{1}{a^3 - \epsilon a^2}$

$a^3 - \epsilon a^2 \neq 0$

$a^2(a - \epsilon) \neq 0$

$a \neq 0$ $a \neq \epsilon$



$P_f = \mathbb{R} - \{0, \epsilon\}$

ب) $y = \frac{1}{a^3 + \epsilon a^2 + 2a + \epsilon} \neq 0$

$a^3 + \epsilon a^2 + 2a + \epsilon \neq 0 \rightarrow (a + \epsilon)(a^2 + \epsilon a + 2) \neq 0$

$a = -\epsilon$ $a^2 = -\epsilon$

$P_f = \mathbb{R} - \{-\epsilon\}$

الف) $y = \sqrt{a^2 - 1} + \sqrt{a - 2}$ $(a=2)$

$(a^2 - 1)(a+1)$ -1 $+$

$(a=1)$ $(a=2)$ $+$ $-$ $+$

$\frac{2}{-1+}$ $D_f = [2, +\infty)$

(4)

ب) $\frac{\sqrt{4 - 2a}}{\sqrt{a - 2}} =$ $4 - 2a \geq 0 \rightarrow a \leq 2$ $D_f = [1, 2]$

$4a - 2 \geq 0 \rightarrow 4a \geq 2 \rightarrow a \geq \frac{1}{2}$

$y = \sqrt{4a - a} + \sqrt{b - 2a}$

(5)

$4a \geq a$ $a \leq b/2$ $\rightarrow \frac{a}{4} = \frac{b}{2} \rightarrow 4a = 2b \Rightarrow \frac{b}{a} = \frac{1}{2}$

$a \geq 0$ $a \geq 0$

الف) $y = \frac{\sqrt{a^2 - a - 2}}{\sqrt{a^2 - 12a^2 + 25}}$ $\rightarrow (a-3)(a+2)$ $\rightarrow (a^2 - 9)(a^2 - 5)$ $\rightarrow (a-3)(a+3)(a-2)(a+2)$

$\frac{-2}{+} \frac{-5}{-} \frac{3}{-} \frac{2}{+}$ $D_f = (-\infty, -3) \cup (2, 3) \cup (3, +\infty)$

ب) $y = \frac{\sqrt{a^2 - 2a^2 - 8a + 2}}{\sqrt{4a^2 + 12a^2 - 25a - 5}} = \frac{(a-1)(a-2)(a+2)}{(a-2)(a+1)(a+3)}$ $\rightarrow \frac{(a-1)(a+2)}{(a+1)(a+3)}$

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

الف) $y = \sqrt{2|a| - 5}$ $2|a| - 5 \geq 0 \rightarrow 2|a| \geq 5 \rightarrow |a| \geq \frac{5}{2}$ $D_f = [2.5, +\infty)$

(4)

ب) $y = \sqrt{2|a| - 2}$ $2|a| - 2 \geq 0 \rightarrow |a| \geq 1$ $D_f = [1, +\infty)$

الف) $y = \sqrt{\frac{a+1}{a-1}} + \sqrt{\frac{4-a}{a^2 + 2a + 1}}$ $(a=2)$

$\frac{1}{+} \frac{-1}{-}$

(1)

$a-1 \neq 0$ $a \neq 1$ $\frac{-1}{+} \frac{1}{-}$ $(-\infty, -1) \cup [1, +\infty)$ $\rightarrow [1, +\infty)$ $\rightarrow D_f = [1, +\infty)$

ب) $\sqrt{2a-5} + \sqrt{2-a}$ $2a-5 \geq 0 \rightarrow a \geq \frac{5}{2}$

$2a-5 \geq 0 \rightarrow a \geq \frac{5}{2}$ $[5/2, +\infty) \cap (-\infty, 2) = \emptyset$