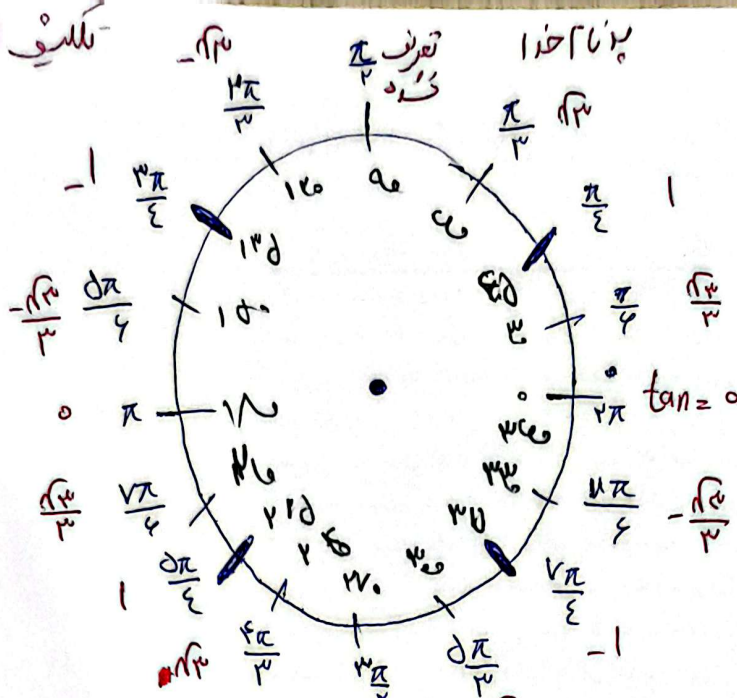


1



2

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

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

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

$$\cos(0) + \sin(\frac{\pi}{2}) = 1 + 1 = 2$$

3

$$\text{if } x=a \rightarrow a^2 + \epsilon a = 2a + a + 2 \rightarrow a^2 + \epsilon a = 3a + 2 \rightarrow a^2 + a - 2 = 0$$

$$\begin{bmatrix} a^2 + \epsilon a & m \times 1 \\ \epsilon a + 2 & m \times 1 \end{bmatrix} \rightarrow f(1) = 1 + \epsilon = 0 \checkmark$$

$$a = \begin{cases} -2 \\ 1 \end{cases}$$

4

$$|a+1| \leq 2 \rightarrow a+1 \leq 2 \rightarrow a \leq 1$$

$$a+1 \leq -2 \rightarrow a \leq -3 \rightarrow 2(-3) - b = 11 - b$$

$$a+2a \rightarrow a = (-3) \rightarrow a - 4 \rightarrow a - 4 = 11 - b$$

$$a+b = 24$$

5

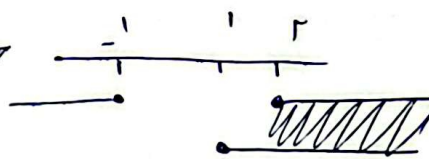
$$\text{الف) } a^2 - \epsilon a^2 \neq 0 \rightarrow a^2(a - \epsilon) \neq 0 \rightarrow a \neq 0 \text{ and } a \neq \epsilon \rightarrow D_f \mathbb{R} - \{0, \epsilon\}$$

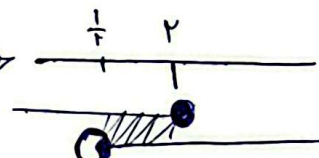
$$\text{ب) } 2a^2 + \epsilon a^2 + 2a + \epsilon \neq 0 \rightarrow a^2(2a + \epsilon) + 2a + \epsilon \rightarrow (2a + \epsilon)(a^2 + 1) \neq 0$$

$$2a \neq -\epsilon \rightarrow a \neq -\frac{\epsilon}{2}, a+1 \neq 0 \rightarrow D_f \mathbb{R} - \{-\frac{\epsilon}{2}\}$$

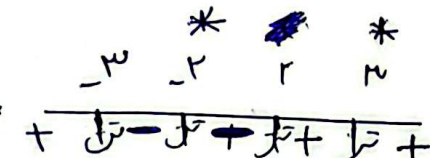
موسی موسی

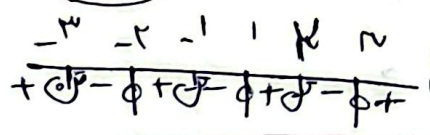
(9) $a^r - 1 \gamma_1 \circ \rightarrow (a-1)(a+1) \gamma_1 \circ \rightsquigarrow \frac{-1}{+ \phi -} \frac{1}{b +} \quad (*)$
 (الف) $a-2 \gamma_1 \circ \rightarrow a \gamma_1 \gamma_2 \quad (**)$

* $\cap$ ** $\rightsquigarrow$  $Df_2 [1, +\infty)$

ب) $a-3 \gamma_1 \gamma_2 \circ \rightarrow a \gamma_1 \gamma_2 \gamma_3 \rightarrow \gamma_2 \gamma_3$
 $a \gamma_1 \gamma_2 \gamma_3 \circ \rightarrow a \gamma_1 \gamma_2 \gamma_3 \rightarrow \gamma_1 \gamma_2 \gamma_3$ $\rightsquigarrow$  $Df_2 [\frac{1}{2}, 2]$
 با بینه

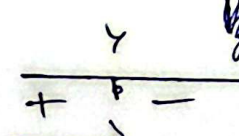
(7) $a \gamma_1 - a \gamma_1 \circ \rightarrow a \gamma_1 \gamma_2 \rightarrow a \gamma_1 \frac{a}{\gamma}$
 $b-3 \gamma_1 \gamma_2 \circ \rightarrow b \gamma_1 \gamma_2 \gamma_3 \rightarrow \frac{b}{\gamma} \gamma_3$ $\rightsquigarrow \frac{a}{\gamma} = \frac{b}{\gamma} \rightarrow a = b \rightarrow \frac{b}{a} = \frac{\gamma}{\gamma} = 1$

(1) (الف) $\frac{a^r - a - 4}{a^2 - 13a + 4} \gamma_1 \circ \rightarrow \frac{(a-3)(a+2)}{(a^2/4)(a^2/2)} \gamma_1 \circ \rightarrow$ 
 $Df_2 = (-\infty, -3) \cup (-2, 2) \cup (3, +\infty)$ $\gamma_2 - 4$ $\gamma_2 - 2$

ب) $\frac{a^r - 2a^r - 13a + 4}{a^r + 2a^r - 13a - 4} \gamma_1 \circ \rightarrow \frac{a^r - 2a^r - 13a + 4}{a^r + 2a^r - 13a - 4} \gamma_1 \circ \rightarrow \frac{a(a^r - 2a + 1) + 4 - 4a}{a(a^r + 2a + 1) - 4 - 4a} \gamma_1 \circ \rightarrow \frac{(a-1)^2 - 4(a-1)}{(a+1)^2 - 4(a+1)} \gamma_1 \circ$
 $\rightsquigarrow \frac{(a-1)(a^r - 2a - 4)}{(a+1)(a^r - 2a - 4)} \gamma_1 \circ \rightarrow \frac{(a-1)(a^r)(a+2)}{(a+1)(a^r)(a-2)} \gamma_1 \circ$

 $Df_2 = (-\infty, -3) \cup (-2, -1) \cup [1, 2) \cup (3, +\infty)$

(9) (الف) $2[a] \gamma_1 \gamma_2 \rightarrow [a] \gamma_1 \gamma_2 \rightarrow a \gamma_1 \gamma_2 \rightarrow Df_2 [1, +\infty)$

ب) $2[a] \gamma_1 \gamma_2 \rightarrow [a] \gamma_1 \gamma_2 \rightarrow a \gamma_1 \gamma_2 \rightarrow Df_2 [3, +\infty)$

(6) (الف) $\frac{a+1}{1-a^2} \gamma_1 \circ \rightarrow \frac{-1}{+ \phi +} \frac{1}{\phi +} \rightarrow \frac{a-1}{a^2 + a + 1} \gamma_1 \circ$ 
 $Df_2 [-1, 1] - \{1\}$

ب) $[a] \gamma_1 \gamma_2 \rightarrow a \gamma_1 \gamma_2$, $2-[a] \gamma_1 \gamma_2 \rightarrow 2 \gamma_1 [a] \gamma_2 \rightarrow (-\infty, 3)$
 $Df_2 = \emptyset \rightarrow$ 