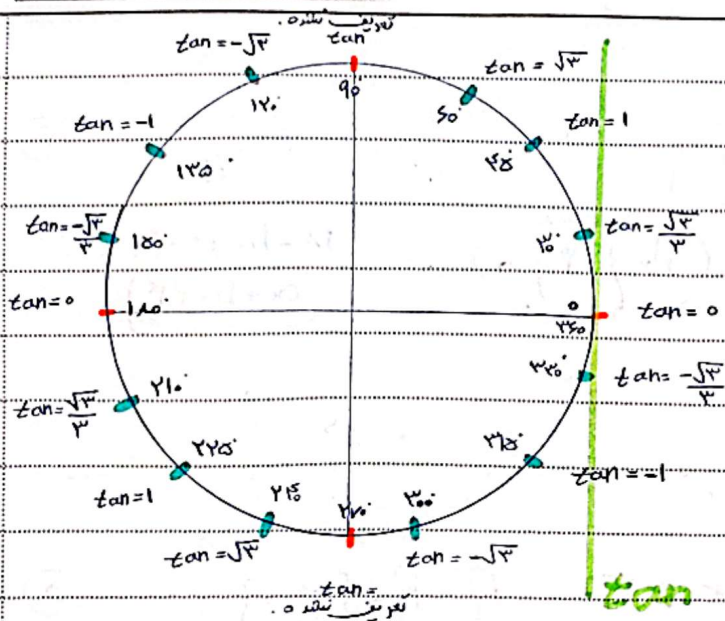




جواب: $\tan = 0$

الف) $\frac{1}{\sqrt{3}} + (-1) + 2(-1) = \frac{-5}{\sqrt{3}}$

ب) $-(-\frac{\sqrt{3}}{\sqrt{3}}) + \frac{\sqrt{3}}{\sqrt{3}} - 3(-\frac{\sqrt{3}}{\sqrt{3}}) = \frac{5\sqrt{3}}{\sqrt{3}}$

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

د) $\cos 0 + \sin(\pi \cos \frac{\pi}{\sqrt{3}}) = \pi \cos \frac{\pi}{\sqrt{3}} = \frac{1}{\sqrt{3}} = \frac{2\sqrt{3}}{\sqrt{3}} \times \frac{1\pi}{\sqrt{3}} = 21\pi^\circ \rightarrow 90^\circ \text{ و } 135^\circ$

$\sin \pi = 0 = 0^\circ$

هر 1 واحد $2\sqrt{3}$ درجه دارد

$\cos 0 + \sin 90 = 1 + 1 = 2$

ا) $\alpha^r + 4\alpha = 3\alpha + 2 \rightarrow \alpha^r + \alpha - 2 = 0 \rightarrow \alpha = 1, -2$

ب) $\alpha = 1 \rightarrow f(1) = 1 + 4 = 5$

شروط $|x+1| \geq 2 \rightarrow \left. \begin{array}{l} x \geq 1 \\ x \leq -3 \end{array} \right\} \Rightarrow \left(\text{بالنسبة لـ } \left\{ \begin{array}{l} 1 \\ -3 \end{array} \right\} \right) \Rightarrow \begin{array}{l} 1x - b = a - 6 \\ \boxed{a + b = 216} \end{array}$ (4)

شروط $-3 \leq x \leq -1$

الف) $x^3 - 4x^2 \neq 0 \rightarrow \left\{ \begin{array}{l} x \neq 4 \\ x \neq 0 \end{array} \right. \quad D = R - \{4, 0\}$ (5)

ب) $2x^3 + 3x^2 + 2x + 4 \neq 0 \rightarrow x \neq -2 \quad D = R - \{-2\}$

$2(x+2)(x^2+1) \neq 0$
 $\cdot \text{ليس } \oplus$

الف) $\sqrt{x^2-1} \rightarrow x^2-1 \geq 0 \rightarrow x^2 \geq 1 \rightarrow \left\{ \begin{array}{l} x \geq 1 \\ x \leq -1 \end{array} \right. \quad \text{I}$ (6)

$\sqrt{x-2} \rightarrow x-2 \geq 0 \rightarrow x \geq 2 \quad \text{II} \Rightarrow \text{I} \cap \text{II} \Rightarrow D = [2, +\infty)$

ب) $5-3x \geq 0 \rightarrow x \leq \frac{5}{3} \quad \text{I}$

$5x-3 \geq 0 \rightarrow x \geq \frac{3}{5} \quad \text{II} \Rightarrow \text{I} \cap \text{II} \Rightarrow D = \left[\frac{3}{5}, \frac{5}{3}\right]$ (7)

$12-a=0 \rightarrow a=12$

$\{2\} \subset \text{الحل} = 0 \rightarrow \Rightarrow \frac{b}{a} = \frac{6}{12} = \frac{1}{2}$

$b-6=0 \rightarrow b=6$ (8)

الف) $\frac{(x-3)(x+2)}{(x-9)(x-4)} \geq 0$ (1)

$\begin{array}{ccccccc} & -3 & & 2 & & 4 & & 9 \\ + & | & - & | & + & | & - & | & + \end{array}$

$D_f = (-\infty, -2] \cup [3, 4) \cup (9, +\infty)$

ب) $\frac{(x-1)(x-3)(x+2)}{(x+1)(x+3)(x-2)} \geq 0$

$\begin{array}{ccccccc} & -3 & & -2 & & -1 & & 1 & & 2 & & 3 \\ + & | & - & | & + & | & - & | & + & | & - & | & + \end{array}$

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

الف) $2[x] - 4 \geq 0 \rightarrow [x] \geq 2 \rightarrow D_f = [2, +\infty)$ (9)

ب) $2[x] - 8 \geq 0 \rightarrow 2[x] \geq 8 \rightarrow [x] \geq 4 \rightarrow D_f = [4, +\infty)$

الف) $\frac{x+1}{(x-2)} \geq 0$ (10)

$\begin{array}{ccc} & -1 & \\ - & | & + \end{array}$

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

$\frac{5-x}{x^2+3x+4} \geq 0$ (10)

$\begin{array}{ccc} & 5 & \\ + & | & - \end{array}$

$D_f = (-\infty, 5] \cup \{3\}$ II

$D_f = [-1, 5] - \{2\}$

ب) $[x] - 4 \geq 0 \rightarrow [x] \geq 4 \rightarrow x \geq 4$ I

$2 - [x] \geq 0 \rightarrow [x] \leq 2 \rightarrow x < 3$ II

$D_f = \emptyset$