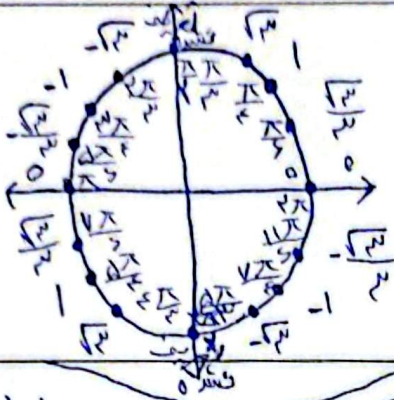




الف) $\frac{1}{2} - 1 + 2 \times (-1) = \left(-\frac{5}{2}\right)$

ب) $\frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} - 2 \times \left(-\frac{\sqrt{3}}{2}\right) = \left(\frac{5\sqrt{3}}{2}\right)$

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

د) $1 + 1 = \left(2\right)$

$a^2 + 2a = 2a + 2 \Rightarrow a^2 + a - 2 = 0 \Rightarrow a = -1$
 $\Rightarrow f(1) = 1 + 2 = 2 + 1 + 2 = \left(5\right)$

$|x+1| \geq 2 \Rightarrow \begin{cases} x+1 \geq 2 \Rightarrow x \geq 1 \\ x+1 \leq -2 \Rightarrow x \leq -3 \end{cases}$
 if $x = -3 \Rightarrow f(x) = 1a - b = a - 2 \Rightarrow a + b = \left(14\right)$

الف) $x^2 - 4x^2 = 0 \Rightarrow x^2(x-4) = 0 \Rightarrow \begin{cases} x=0 \\ x=4 \end{cases}$
 $\Rightarrow Df = \mathbb{R} - \{0, 4\}$
 ب) $2x^2 + 2x + 4x^2 + 4 = 0 \Rightarrow (x^2 + 1)(2x + 4) = 0$
 $\Rightarrow x = -2 \Rightarrow Df = \mathbb{R} - \{-2\}$

الف) $x^2 - 1 \geq 0 \Rightarrow \begin{cases} x \geq 1 \\ x \leq -1 \end{cases} \textcircled{1} \quad x - 2 \geq 0 \Rightarrow x \geq 2 \textcircled{2}$
 $\textcircled{1} \cap \textcircled{2} \Rightarrow D_f = [2, +\infty)$
 ب) $5 - 2x \geq 0 \Rightarrow x \leq 2 \textcircled{1} \quad 5x - 2 > 0 \Rightarrow x > \frac{2}{5} \textcircled{2}$
 $\textcircled{1} \cap \textcircled{2} \Rightarrow D_f = (\frac{2}{5}, 2]$

$\begin{cases} 5x - a \geq 0 \Rightarrow x \geq \frac{a}{5} \\ b - 2x \geq 0 \Rightarrow x \leq \frac{b}{2} \end{cases} \Rightarrow D_f = \left\{ \frac{a}{5} = \frac{b}{2} = 2 \Rightarrow \right.$
 $a = 10, b = 4 \Rightarrow \frac{b}{a} = \frac{4}{10} = \frac{2}{5} \textcircled{1}$

الف) $y = \sqrt{\frac{(x-2)(x+1)}{(x+2)(x-2)(x+1)(x-1)}} \Rightarrow \frac{x}{f(x)} \begin{array}{c|c} -2 & -1 & 1 & 2 \end{array}$
 $\Rightarrow D_f = (-\infty, -2) \cup (2, +\infty)$
 ب) $y = \sqrt{\frac{(x-1)(x-2)(x+1)}{(x+1)(x+2)(x-2)}} \Rightarrow \frac{x}{f(x)} \begin{array}{c|c} -2 & -1 & 1 & 2 \end{array}$
 $\Rightarrow D_f = (-\infty, -2) \cup [-1, 1] \cup [2, +\infty)$

الف) $2[x] - 4 \geq 0 \Rightarrow [x] \geq 2 \Rightarrow D_f = [2, +\infty)$
 ب) $2[x] - 6 \geq 0 \Rightarrow [x] \geq \frac{6}{2} \Rightarrow D_f = [3, +\infty)$

الف) $\frac{x}{f(x)} \begin{array}{c|c} -1 & 2 \end{array} \Rightarrow [-1, +\infty) - \{2\} \textcircled{1} \quad \frac{x}{f(x)} \begin{array}{c|c} 4 \end{array} \Rightarrow (-\infty, 4] \textcircled{2}$
 $\textcircled{1} \cap \textcircled{2} \Rightarrow D_f = [-1, 4] - \{2\}$
 ب) $[x] - 4 \geq 0 \Rightarrow x \geq 4 \textcircled{1} \quad 2 - [x] \geq 0 \Rightarrow x < 2 \textcircled{2}$
 $\textcircled{1} \cap \textcircled{2} \Rightarrow D_f = \emptyset$