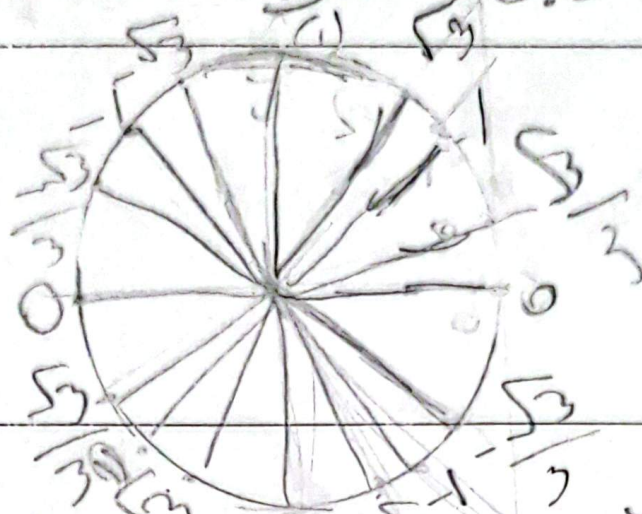




۱) $1 + 1 = 2$

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

۳) $\frac{2}{3} + \frac{5}{3} - 3(-\frac{5}{3}) = \frac{25}{3}$

۴) $\frac{2}{3} + \frac{5}{3} - 2(-\frac{5}{3}) = \frac{45}{3}$

$x \in \mathbb{R}$

$x^2 + x - 2 = 0 \Rightarrow (x+2)(x-1) = 0$

$1^2 + 4 = 5$

$x+1 \geq 2 \Rightarrow x \geq 1$ $x \leq -3$

$f_1(-3) = 18 - 6$

$f_2(-3) = a - 6$

$18 + 6 = a + 6 \Rightarrow 24 = a$

$x^2(x-4) = 0 \Rightarrow x = 0, 4$

ب) $2x(x+2) + 2(x+2) = (x+2)(2x+2)$

$= 2(x+1)(x+2)$

$$ii) 6x-3 < (2x+1) \geq 0 \Rightarrow x > 1, 1 \leq x \leq 2$$

$$x > 2 \Rightarrow x \in (2, +\infty)$$

$$\therefore \begin{cases} 6x-3 \geq 0 \Rightarrow x \geq \frac{1}{2} \\ 6x-3 < 0 \Rightarrow x < \frac{1}{2} \end{cases} \Rightarrow x \in \left(\frac{1}{2}, 2\right)$$

$$x > \frac{a}{6} \text{ , } x \leq \frac{b}{3} \Rightarrow x \in \left[\frac{a}{6}, \frac{b}{3}\right]$$

$$\frac{a}{6} = 1 \Rightarrow a = 6 \quad \frac{b}{3} = 2 \Rightarrow b = 6$$

$$ii) y = \frac{(x-3)(x+2)}{(x-3)(x+3)(x-2)(x+2)}$$

$$\begin{aligned} \Rightarrow (x-1)(x^2+x-6) &= 0 \\ \Rightarrow 1, 3, 2 \end{aligned}$$

$$\begin{aligned} (x-1)(x^2+x-6) &= (x-1)(x-3)(x+2) \\ \Rightarrow 1, 3, 2 \end{aligned}$$

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

$$ii) 2[x] - 4 \geq 0 \Rightarrow [x] \geq 2 \Rightarrow x \geq 2$$

$$\Rightarrow D = [2, +\infty)$$

$$\Rightarrow 2[x] - 5 \geq 0 \Rightarrow [x] \geq 2, 5 \Rightarrow x \geq 3$$

$$\Rightarrow D = [3, +\infty)$$

$$ii) \frac{x+1}{12-3x} \geq 0 \Rightarrow \textcircled{1} x \neq 3, x \geq -1 \textcircled{2}$$

$$\frac{1-x}{x^2+2x+4} \geq 0 \Rightarrow \textcircled{1} x \leq 6$$

$$\begin{aligned} \Rightarrow [x] - 4 \geq 0 &\Rightarrow x \geq 4 \\ 2[x] \geq 0 &\Rightarrow [x] \leq 3 \end{aligned}$$

$$D = \emptyset \quad \text{---} \quad x \in \mathbb{R}$$