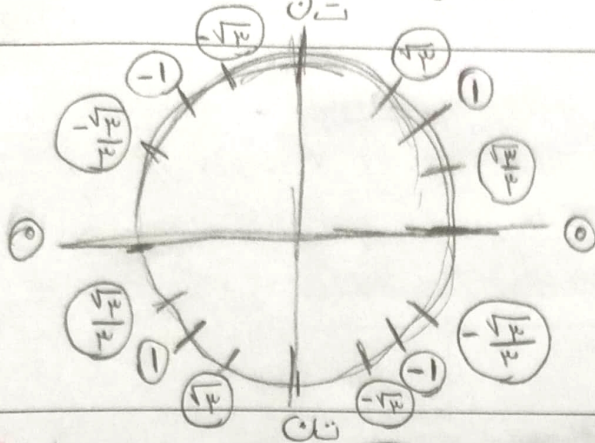




الف) $\frac{1}{4} + (-1) + 2(-1) = \frac{-5}{4}$

ب) $-\left(-\frac{\sqrt{3}}{4}\right) + \frac{\sqrt{3}}{4} - 3\left(-\frac{\sqrt{3}}{4}\right) = \frac{5\sqrt{3}}{4}$ $\cos(0) + \sin\left(\frac{\pi}{4}\right) = 2$

ج) $-\frac{\sqrt{3}}{4} + 2\left(\frac{\sqrt{3}}{4}\right) - 2\frac{\sqrt{3}}{4} = 0$

$a^2 + 2a = 2a + a + 2$ $a=1$
 $a^2 + a - 2 = 0$
 $(a+2)(a-1)$
 $\downarrow \quad \downarrow$
 $(-2) \quad (1)$
 غ ق ق

$f(n) = \begin{cases} n^2 + 2n & n \geq 1 \\ 2n + 2 & n \leq 1 \end{cases}$

$f(1) = 5$

$|n+1| \geq 2$ $n \geq 1$
 $n \leq -3$

$n = -3$

$11 - b = a - 9$
 $a + b = 20$

$f(n) = \begin{cases} 2n^2 - b & n \geq 1, n \leq -3 \\ a + 2n & -3 \leq n \leq -1 \end{cases}$

الف) $n^2 - 2n^2 \neq 0$ $n^2(n-2) \neq 0$

$D_f = \mathbb{R} - \{0, 2\}$

ب) $2n^3 + 2n^2 + 2n + 2 \neq 0$

$2n^2(n+1) + 2(n+1) \neq 0$

$(n+1)(2n^2 + 2)$ $D_f = \mathbb{R} - \{-2\}$

الف) $n^2 - 1 \geq 0$ $n^2 \geq 1$ $n \geq 1$ $n \leq -1$
 $n - 1 \geq 0$ $n \geq 1$ $D_f = [1, +\infty)$

ب) $4 - 3n \geq 0$ $n \leq \frac{4}{3}$
 $4n - 3 > 0$ $n > \frac{3}{4}$ $D_f = (\frac{3}{4}, \frac{4}{3}]$

$12 - a = 0$ $a = 12$
 $b - 9 = 0$ $b = 9$
 $\frac{b}{a} = \frac{9}{12} = \frac{3}{4}$

$\begin{matrix} 3 & -2 \\ (n-3) & (n+2) \end{matrix}$
 $\frac{n^2 - n - 6}{n^2 - 12n + 12} \geq 0$
 $+2 - 12 + 12$
 $(n-3)(n+2)$
 $n = \pm \sqrt{6}$ $n = \pm 2$

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

ب) $\frac{(n-1)(n-3)(n+2)}{n^3 - 2n^2 - 5n + 6} \geq 0$
 $\frac{n^3 + 2n^2 - 5n - 6}{(n+1)(n+2)(n-3)}$

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

الف) $2[n] - 4 \geq 0$ $[n] \geq 2$ $D_f = [2, +\infty)$

ب) $2[n] - 5 \geq 0$ $[n] \geq \frac{5}{2}$ $D_f = [\frac{5}{2}, +\infty)$

الف) $\frac{n+1}{|n-3|} \geq 0$ $\frac{-1}{1} + \frac{1}{1}$ $\frac{4-n}{n^2+2n+5} \geq 0$ $\frac{4}{1} - \frac{1}{1}$
 $D_f = [-1, 3) \cup (4, +\infty)$

ب) $[n] - 4 \geq 0$ $[n] \geq 4$ $n \geq 4$
 $4 - [n] \geq 0$ $[n] \leq 4$ $n < 4$ $D_f = (3, 4]$