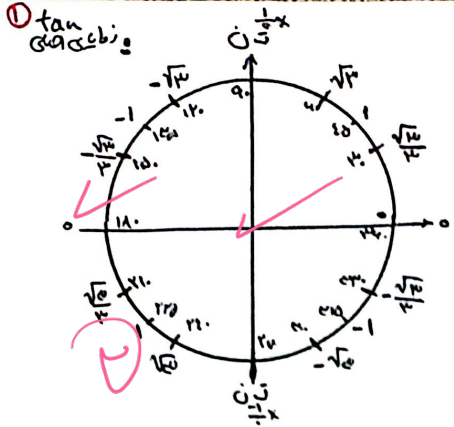




الف) $y = \sqrt{\frac{(n-c)(n+r)}{A^2 - 13A + 4c}} \Rightarrow \sqrt{\frac{(n^2-c)(n^2+r)}{(A-\varepsilon)(A-q)}}$

$A = n^2 \Rightarrow n = \pm 1, \pm 2$

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

ب) $y = \sqrt{\frac{n^2 - 2n^2 - 2n + 4}{n^2 + 2n^2 - 2n - 4}} \xrightarrow{\pm n-1} \sqrt{\frac{n^2 - 2n^2 - 2n + 4}{n^2 + 2n^2 - 2n - 4}}$

$\Rightarrow \sqrt{\frac{(n-1)(n^2-c)(n^2+r)}{(n+1)(n^2-c)(n^2+r)}} \Rightarrow \sqrt{\frac{n-1}{n+1}}$

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

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

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

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

د) $\cos 0 + \sin \frac{\pi}{4} = 1 + \frac{1}{\sqrt{2}} = 2$

الف) $\sqrt[n]{n} - \varepsilon > 0 \Rightarrow \sqrt[n]{n} > \varepsilon \Rightarrow [n] > \varepsilon \Rightarrow D_f = [2, +\infty)$

ب) $\sqrt[n]{n} - 0 > 0 \Rightarrow \sqrt[n]{n} > 0 \Rightarrow [n] > 0 \Rightarrow D_f = [1, +\infty)$

الف) $f(n) = \begin{cases} n^2 + 2n & n \geq a \\ n^2 + a + 2 & n < a \end{cases}$

$a = -2$

$n = a \Rightarrow a^2 + 2a = 2a + a + 2 \Rightarrow a^2 + a - 2 = 0$

$(a+2)(a-1) = 0 \Rightarrow a = -2$

$(a > 0) \Rightarrow a = 1$

$f(1) = 1^2 + 2 \times 1 = 1 + 2 = 3$

الف) $\sqrt{\frac{n+1}{|n-c|}} \Rightarrow \frac{n+1}{|n-c|} > 0 \Rightarrow [-1, +\infty) - \{c\}$

$\sqrt{\frac{4-n}{n^2 + 2n + 2}} \Rightarrow \frac{4-n}{n^2 + 2n + 2} > 0 \Rightarrow (-\infty, 4]$

$[-1, 4] - \{c\} = D_f$

ب) $\sqrt[n]{n} - 2 > 0 \Rightarrow \sqrt[n]{n} > 2 \Rightarrow D_f = [2, +\infty)$

$\sqrt[n]{n} - 0 > 0 \Rightarrow \sqrt[n]{n} > 0 \Rightarrow D_f = (-\infty, c)$

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

$a + b = 9$

$n+1 \geq 2 \Rightarrow n \geq 1 \Rightarrow 2n^2 - b \geq 2 + 2 \Rightarrow b \leq 2$

$n+1 \leq -1 \Rightarrow n \leq -2 \Rightarrow a + 2n \leq a - 4 \Rightarrow a - 4 \leq 2 \Rightarrow a \leq 6$

$b = 2, a = 7$

الف) $\sqrt[n]{n} - 2 > 0 \Rightarrow \sqrt[n]{n} > 2 \Rightarrow D_f = [2, +\infty)$

الف) $\frac{n^2 - 2n^2 + 0}{n^2(n-2) + 0} = \frac{-n^2}{n^2(n-2)} = -\frac{1}{n-2} \Rightarrow D_f = \mathbb{R} - \{2\}$

ب) $2n^2 + 2n^2 + 2n + 2 \neq 0$

$\Rightarrow 4n^2 + 2n + 2 \neq 0 \Rightarrow (2n+1)^2 + 1 \neq 0$

$\Rightarrow D_f = \mathbb{R} - \{-\frac{1}{2}\}$

الف) $n^2 - 1 > 0 \Rightarrow n > 1, n < -1$

$n - 2 > 0 \Rightarrow n > 2$

$D_f = [2, +\infty)$

ب) $4 - 2n > 0 \Rightarrow n < 2$

$4n - 3 > 0 \Rightarrow n > \frac{3}{4}$

$D_f = (\frac{3}{4}, 2)$

الف) $4n - a > 0 \Rightarrow 4n - a = 0 \Rightarrow a = 4n$

$b - 4 > 0 \Rightarrow b > 4$

$\frac{b}{a} = \frac{4}{4n} = \frac{1}{n}$