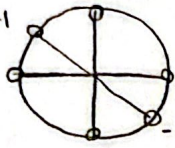
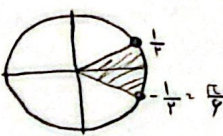
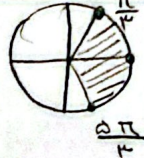


الف) $\frac{2x^3 + 3x^2 - 11x + 3}{x^2 + 5x - 3} \mid \frac{x-1}{x^2 + 5x - 3}$	ب) $\frac{2x^3 + 9x^2 + 10x + 3}{x^2 + 7x + 3} \mid \frac{x+1}{x^2 + 7x + 3}$	1
$(x-1)(2x^2 + 5x - 3) \neq 0 \rightarrow (x^2 + 5x - 4)$ $x = -1, -\frac{4}{5}$ $\mathbb{R} - \{+1, -\frac{4}{5}\}$	$(x+1)(2x^2 + 7x + 3) \neq 0$ $(x^2 + 7x + 4)$ $x = -\frac{1}{7}, -3, -1$ $\mathbb{R} - \{-\frac{1}{7}, -3, -1\}$	
الف) $\frac{x^3 - 2x^2 + 2x - 1}{x^2 - x + 1} \mid \frac{x-1}{x^2 - x + 1}$	ب) $\frac{x+3}{(x-1)(x^2 - x + 1)} \geq 0$ $x = -3, 1$ $\frac{-3}{+} \frac{1}{-} \frac{1}{+}$	2
$x \geq 1 \quad x^2 - 5x + 5 - 2x + 5$ $= x^2 - 7x + 10 = (x-2)(x-5)$ $x \neq 2, 5$	$x < 1 \quad x-1 = 1-x$ $x^2 + 3x \neq 0 \rightarrow x(x+3) \neq 0$ $x \neq 0, -3$	3
$\mathbb{R} - \{-3, 0, 2, 5\}$		
الف) $[x] - 2 \geq 0$ $[x] \geq 2$ $-x \geq 2$ $x \leq -2$ $D: (-\infty, -2]$	ب) $[x] = x$ $x^2 - 2x - 3 \neq 0$ $x = +3, -1$ $[x] = +3 \rightarrow x \in [3, 4)$ $[x] = -1 \rightarrow [-1, 0)$ $\mathbb{R} - \{[-1, 0) \cup [3, 4)\}$	4
الف) $[x - \frac{1}{p}] + [x + \frac{1}{p}] \geq 0$ $[x - \frac{1}{p}] + [x - \frac{1}{p} + 1] \geq 0 \rightarrow [x - \frac{1}{p}] + [x - \frac{1}{p}] + 1 \geq 0$ $2[x - \frac{1}{p}] \geq -1 \quad [x - \frac{1}{p}] \geq -\frac{1}{2}$ $x - \frac{1}{p} \geq 0 \quad x \geq \frac{1}{p}$ $D: [\frac{1}{p}, +\infty)$	ب) $a \in \mathbb{Z} \quad [a] + [-a] = 0$ $a \notin \mathbb{Z} \quad [a] + [-a] = -1$ $x - \frac{1}{p} \in \mathbb{Z}$ $D: \{x \mid k + \frac{1}{p} = x, k \in \mathbb{Z}\}$	5

الف) $\tan \neq 1$ $\tan \neq -1$ $\sin \neq 0$ $\cos \neq 0$ $\tan = -1$  $-1 = \tan$ $\mathbb{R} - \{k\pi, k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4}\}$	ب) $1 - r \sin^2 \geq 0 \Rightarrow 1 \geq r \sin^2 \Rightarrow \frac{1}{r} \geq \sin^2$ $-\frac{1}{r} \leq \sin \leq \frac{1}{r}$ $D: [k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4}]$ 	6
الف) $r \sin - 1 \geq 0 \Rightarrow r \sin \geq 1 \Rightarrow \sin \geq \frac{1}{r}$  $\frac{1}{r} = \sin$ $D: [k\pi + \frac{\pi}{4}, k\pi + \frac{5\pi}{4}]$	ب) $1 - r \cos \geq 0 \Rightarrow 1 \geq r \cos \Rightarrow \frac{1}{r} \geq \cos$  $D: [k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4}]$	7
الف) $-1 \leq x^2 + 3x + 1 \leq +1$ $-1 \leq x^2 + 3x + 1$ $0 \leq x^2 + 3x + 2$ $0 \leq (x+1)(x+2)$ $x = -1, -2$ $\frac{-3 \pm \sqrt{9-4}}{2} = \frac{-3 \pm \sqrt{5}}{2}$ $[-\frac{3+\sqrt{5}}{2}, -\frac{3-\sqrt{5}}{2}]$ $x^2 + 3x + 1 \leq +1$ $x(x+3) \leq 0$ $x = 0, -3$ $[-3, 0]$ $D: (-\infty, -2] \cup [-1, +\infty)$	ب) $a - r_n \geq 0 \Rightarrow -1 \leq \sqrt{a - r_n} \leq 1$ $a \geq r_n$ $\frac{a}{r} \geq r$ $a - r_n \leq 1$ $r \leq r_n$ $r \leq a$ $D: [r, \frac{a}{r}]$	8
الف) $x > 0$ $1 - \log^{\frac{1}{r}} x > 0$ $1 > \log^{\frac{1}{r}} x$ $x < r \Rightarrow b > 1$ $D: (-\infty, r)$	ب) $x > 0$ $D: (0, \frac{1}{r})$ $1 - \log^{\frac{1}{r}} \frac{1}{r} > 0$ $1 > \log^{\frac{1}{r}} \frac{1}{r} \rightarrow b < 1$ $\frac{1}{r} < x$	9
الف) $r f_n - x^2 - 1 \geq 0$ $r f_n - x^2 \geq 1$ $f_n - x^2 \geq \frac{1}{r}$ $\Rightarrow x^2 - f_n + \frac{1}{r} \leq 0$ $x = 1, \frac{1}{r}$ $\frac{1 \pm \sqrt{1 - 4(\frac{1}{r} - f_n)}}{2}$ $D: [1, \frac{1}{r}]$	ب) $\frac{r_n + a}{r_n + r} \in W \Rightarrow x = -\frac{r_n + a}{r_n - r}$ $x = \frac{-r_n + a}{r_n - r}$ $D: \{x x = \frac{-rk + a}{rk - r}, k \in W\}$	10

