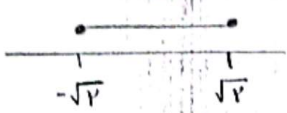
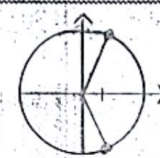
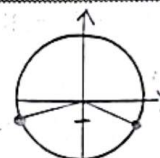
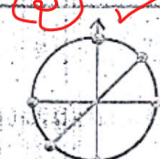
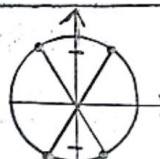


$f(x)$	الف) $f(x) + 2$ ۲ واحد بالا.	ب) $2 \cdot f(x)$ دخانه شکل بسته شد.	
ج) $f(x-1)$ ۱ واحد راست.	د) $-f(x)$		
الف) $x^2 - 5x + 4 > 0$ $(x-1)(x-4) > 0$ $D_f = (-\infty, 1) \cup (4, +\infty)$	ب) $x^2 - 4x + 5 < 0$ $(x-1)(x-5) < 0$ $D_f = (1, 5)$		
ج) $x^2 + 4x + 5 \geq 0$ $(x+1)(x+5) \geq 0$ $D_f = (-\infty, -5] \cup [-1, +\infty)$	د) $x^2 - 4x + 4 \leq 0$ $(x-1)(x-4) \leq 0$ $D_f = [1, 4]$		
الف) $\frac{x^2 - 3x + 2}{x - 5} < 0$ $\frac{(x-1)(x-2)}{x-5} < 0$ $D_f = (-\infty, 1) \cup (2, 5) \cup (5, +\infty)$	ب) $\frac{x^2 - 1}{x^2 - 4x + 5} \geq 0$ $\frac{(x-1)(x+1)}{(x-1)(x-5)} \geq 0$ $D_f = (-\infty, -1] \cup (5, +\infty)$		
الف) $y = \sqrt{\frac{x^3 - 1}{x^3 - x}} \Rightarrow \frac{x^3 - 1}{x^3 - x} \geq 0$ $x^3 - 1 = 0 \Rightarrow x = 1$ $x^3 - x = 0 \Rightarrow x = 0, \pm 1$ $D_f = (-\infty, -1) \cup (0, +\infty) - \{1\}$	ب) $y = \sqrt{\frac{x^2 - 16}{x^2 - 5x + 4}} \Rightarrow \frac{(x-4)(x+4)}{(x-1)(x-4)} \geq 0$ $\frac{x+4}{x-1} \geq 0$ $D_f = (-\infty, -4] \cup (1, +\infty) - \{4\}$		
الف) $y = \sqrt{4 - \sqrt{4 - x}}$ $4 - \sqrt{4 - x} \geq 0 \Rightarrow \sqrt{4 - x} \leq 4$ $4 - x \leq 16 \Rightarrow x \geq -12$ $D_f = [-12, 4]$	ب) $y = \sqrt{4 - \sqrt{x - 2}}$ $4 - \sqrt{x - 2} \geq 0 \Rightarrow \sqrt{x - 2} \leq 4$ $x - 2 \leq 16 \Rightarrow x \leq 18$ $D_f = [2, 18]$		

$a) y = \sqrt{c - r x ^r}$ $c - r x ^r \geq 0$ $r x ^r \leq c$ $ x ^r \leq \frac{c}{r}$ $-\sqrt[r]{\frac{c}{r}} \leq x \leq \sqrt[r]{\frac{c}{r}}$  $D_f = [-\sqrt[r]{\frac{c}{r}}, \sqrt[r]{\frac{c}{r}}]$	$b) y = \sqrt{ x - a}$ $ x - a \geq 0$ $ x \geq a$ $x \geq a \text{ or } x \leq -a$ $D_f = \{x x \in \mathbb{R}, x \geq a \text{ or } x \leq -a\}$	8
$a) y = \sqrt{\frac{ x +1}{ x -r}}$ $ x -r \neq 0$ $ x \neq r$ $x \neq \pm r$ $D_f = \{x x \in \mathbb{R}, x \neq \pm r\}$		9
$b) y = \sqrt{\frac{\sqrt{x}+1}{\sqrt{x}-r}}$ $\sqrt{x}+1 \geq 0 \rightarrow x \geq -1$ $\sqrt{x}-r \neq 0 \rightarrow \sqrt{x} \neq r$ $\sqrt{x} \neq r \Rightarrow x \neq r^2$ $D_f = \{x x \in \mathbb{R}, [0, +\infty) - r^2\}$		10
$a) y = \frac{\sin x}{r \cos x - 1}$ $r \cos x - 1 \neq 0 \Rightarrow \cos x \neq \frac{1}{r}$ $D_f = \{x x \in \mathbb{R}, x \neq \pm \arccos(\frac{1}{r})\}$ 	$b) y = \frac{\cos x + 1}{r \sin x + 1}$ $r \sin x + 1 \neq 0 \Rightarrow \sin x \neq -\frac{1}{r}$ $D_f = \{x x \in \mathbb{R}, x \neq \pm \arcsin(-\frac{1}{r})\}$ 	11
$c) y = \frac{\tan x + r}{\cot x - 1}$ $\begin{cases} \cos x \neq 0 \\ \sin x \neq 0 \\ \cot x \neq 1 \end{cases}$ $D_f = \{x x \in \mathbb{R}, x \neq \pm \frac{\pi}{4}\}$ 	$d) y = \frac{\sin x + 1}{r \sin x - r}$ $r \sin x - r \neq 0 \Rightarrow \sin x \neq \pm \frac{1}{r}$ $D_f = \{x x \in \mathbb{R}, x \neq \pm \arcsin(\frac{1}{r})\}$ 	12
$y = \sqrt{ x-r - \frac{1}{r}}$ $ x-r - \frac{1}{r} \geq 0$ $ x-r \geq \frac{1}{r}$ $ x-r \geq \frac{1}{r} \Rightarrow \begin{cases} x-r \geq \frac{1}{r} \rightarrow x \geq r + \frac{1}{r} \\ x-r \leq -\frac{1}{r} \rightarrow x \leq r - \frac{1}{r} \end{cases}$ $D_f = \{x x \in \mathbb{R}, x \geq r + \frac{1}{r} \text{ or } x \leq r - \frac{1}{r}\}$ 		13
$a) y = \sqrt{c - r x }$ $c - r x \geq 0$ $r x \leq c \rightarrow x \leq \frac{c}{r}$ $-\frac{c}{r} \leq x \leq \frac{c}{r}$ $D_f = [-\frac{c}{r}, \frac{c}{r}]$	$b) y = \sqrt{\frac{ x }{ x }}$ $\frac{ x }{ x } \geq 0$ $D_f = \mathbb{R} - \{0\}$	14