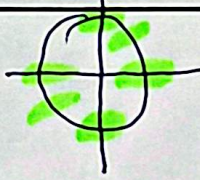
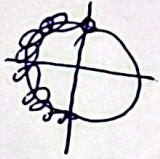


الف) $y = \frac{\cot x + 1}{\tan x + 1}$  $\tan x \neq -1 \rightarrow x \neq K\pi + \frac{3\pi}{4}$ $D = \mathbb{R} - \{K\pi + \frac{3\pi}{4}, \frac{K\pi}{2}\}$	ب) $y = \sqrt{1 - \sin^2 x}$  (ج) $1 - \sin^2 x \geq 0 \rightarrow 1 \geq \sin^2 x$ $\rightarrow \sin^2 x \leq 1 \Rightarrow -1 \leq \sin x \leq 1$ $D = [K\pi - \frac{\pi}{2}, K\pi + \frac{\pi}{2}]$	٦
الف) $2\sin x - 1 \geq 0 \rightarrow 2\sin x \geq 1 \rightarrow \sin x \geq \frac{1}{2}$ جواب: $[2K\pi + \frac{\pi}{6}, 2K\pi + \frac{5\pi}{6}]$	ب) $1 - 2\cos x \geq 0 \rightarrow 1 \geq 2\cos x \rightarrow \cos x \leq \frac{1}{2}$ جواب: $[2K\pi + \frac{2\pi}{3}, 2K\pi + \frac{4\pi}{3}]$  	٧
الف) $y = \arcsin(x^2 + 3x + 1) \rightarrow -1 \leq x^2 + 3x + 1 \leq 1 \rightarrow 0 \leq x^2 + 3x + 2 \rightarrow 0 \leq (x+1)(x+2)$ $\frac{3}{2} \leq x \leq 0 \rightarrow x \geq \frac{3}{2}$ یا $x \leq 0$ ب) $\cos y = \sqrt{5-x} \Rightarrow x=5, \cos y=0 \rightarrow y = \frac{\pi}{2}$ تابع معکوس باشد	$\frac{3}{2} \leq x \leq 0 \rightarrow D = [-\frac{3}{2}, 0] \cup [1, 2]$	٨
الف) $y = \log_2(1 - \log_2 x) \rightarrow x > 0 \rightarrow 1 - \log_2 x > 0 \rightarrow 1 > \log_2 x \rightarrow 2 > x$ ب) $\log_2(1 - \log_2 \frac{x}{2}) \geq 0 \rightarrow 1 - \log_2 \frac{x}{2} \geq 1 \rightarrow \log_2 \frac{x}{2} \leq 0 \rightarrow \frac{x}{2} \leq 1 \rightarrow x \leq 2$ $D = (0, 2)$	$\log_2 \frac{x}{2} \leq 0 \rightarrow \frac{x}{2} \leq 1 \rightarrow x \leq 2$ $D = (\frac{1}{2}, +\infty)$ (باز)	٩
الف) $2^{x^2 - x^2} - 1 \geq 0 \rightarrow 2^{x^2 - x^2} \geq 1 \rightarrow x^2 - x^2 \geq 0 \rightarrow 0 \geq 0$ ب) $2^{x^2 - x^2} - 1 \geq 0 \rightarrow 2^{x^2 - x^2} \geq 1 \rightarrow x^2 - x^2 \geq 0 \rightarrow 0 \geq 0$ $D = [1, 3]$	$2^{x^2 - x^2} - 1 \geq 0 \rightarrow 2^{x^2 - x^2} \geq 1 \rightarrow x^2 - x^2 \geq 0 \rightarrow 0 \geq 0$ $D = [1, 3]$	١٠

الف) $y = \frac{x+3}{(x-1)(x+1)(x+2)}$ $\rightarrow x \neq 1 \text{ و } \frac{1}{x} \neq -3$ $\rightarrow \text{دامنه} = \mathbb{R} - \{1, \frac{1}{-3}\}$	ب) $\frac{x+3}{(x-1)(x+1)(x+2)}$ $\rightarrow x \neq -1 \text{ و } \frac{1}{x} \neq -2$ $\rightarrow D_f = \mathbb{R} - \{-1, \frac{1}{-2}\}$
الف) $\frac{x+3}{(x-1)(x^2x+1)}$ $\rightarrow x \neq 1 \rightarrow D = \mathbb{R} - \{1\}$ ب) $\sqrt{\frac{x+3}{(x-1)(x^2-x+1)}}$ $\rightarrow \frac{-\frac{1}{x+1} - \frac{1}{1-x}}$	$D = (-\infty, -\frac{1}{2}] \cup (1, \infty)$
$y = \frac{2}{x^2-5 x-1 -2x+5} \rightarrow x-1 ^2 - 5 x-1 + 5 \rightarrow A = x-1 \rightarrow (A-1)(A-4) = 0$ $\rightarrow A = 1 \rightarrow A^2 - 5A + 5 = 0 \quad \text{ب) } A = 4$ $x-1 = -1 \rightarrow x=0 \rightarrow x-1 =1 \rightarrow x=2$ $x-1 = -4 \rightarrow x=-3 \rightarrow x-1 =4 \rightarrow x=5$ $(x^2+3x)=0 \rightarrow x=0 \text{ و } \frac{1}{x} \neq -2$ $\rightarrow \mathbb{R} - \{-2, 0, 2, 5\}$ $(x-2)(x-5) \rightarrow x=2 \text{ و } 5$	3
الف) $\sqrt{[-x]-2} \rightarrow [-x]-2 \geq 0 \rightarrow [-x] \geq 2 \rightarrow x \leq -2 \rightarrow D_f = \{-2 \text{ و } \infty\}$ ب) $\frac{x^2+4}{(x-2)(x+1)} \rightarrow [x] \neq 2 \rightarrow x \notin [2, 3) \rightarrow \mathbb{R} - [2, 3) \cup [-1, 0)$ $[x] \neq 1 \rightarrow x \notin [-1, 0]$	4
الف) $y = \sqrt{[x-\frac{1}{3}]} + [x-\frac{1}{3}+1] \rightarrow \sqrt{2[x-\frac{1}{3}]+1} \rightarrow 2[x-\frac{1}{3}]+1 \geq 0 \rightarrow 2[x-\frac{1}{3}] \geq -1$ $\rightarrow [x-\frac{1}{3}] \geq \frac{1}{2} \rightarrow x-\frac{1}{3} \geq \frac{1}{2} \rightarrow x \geq \frac{5}{6} \rightarrow D = [\frac{5}{6}, \infty)$ ب) $\sqrt{[A]} + [-A] \rightarrow A \in \mathbb{Z} \rightarrow [A] + [-A] = 0 \quad \checkmark$ $A \notin \mathbb{Z} \rightarrow [A] + [-A] = -1 \quad \checkmark$ $\rightarrow x \cdot \frac{1}{x} \in \mathbb{Z}$ $\rightarrow D = \{x \mid x = 1, \frac{1}{2}, x \in \mathbb{Z}^-\}$	5