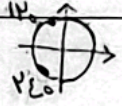
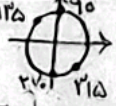
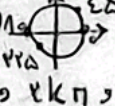


الف) $y = \frac{\sin x - 2}{2\cos x + 1}$ $2\cos x + 1 \neq 0$ $2\cos x \neq -1$ $\cos x \neq -\frac{1}{2}$  $DF = \mathbb{R} - \left\{ 2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3} \right\}$ ✓	
ب) $y = \frac{\sin x + 3}{\cos x - 1}$ $\cos x - 1 \neq 0$ $\cos x \neq 1$  $DF = \mathbb{R} - \{2k\pi\}$ ✓	1
الف) $y = \frac{2\sin x + 1}{\tan x + 1}$ $\tan x + 1 \neq 0$ $\tan x \neq -1$  $\cos x \neq 0$ $DF = \mathbb{R} - \left\{ 2k\pi + \frac{3\pi}{4}, 2k\pi + \frac{7\pi}{4}, 2k\pi + \frac{\pi}{2}, 2k\pi + \frac{3\pi}{2} \right\}$ ✓	2
ب) $y = \frac{\cos x + 1}{\cot x - 1}$ $\cot x - 1 \neq 0$ $\cot x \neq 1$  $\sin x \neq 0$ $DF = \mathbb{R} - \left\{ 2k\pi + \frac{\pi}{4}, 2k\pi + \frac{5\pi}{4}, 2k\pi, 2k\pi + \pi \right\}$ ✓	2
الف) $\sin y = x^2 - 2$ $-1 \leq x^2 - 2 \leq 1$ $-1 \leq x^2 \leq 3$ $\rightarrow 1 \leq x \leq \sqrt{3}$ $-\sqrt{3} \leq x \leq -1$ $DF = [1, \sqrt{3}] \cup [-\sqrt{3}, -1]$ ✓	3
ب) $y = \arccos(\sqrt{x} - 3)$ $-1 \leq \sqrt{x} - 3 \leq 1$ $\rightarrow 2 \leq \sqrt{x} \leq 4$ $4 \leq x \leq 16$ (1) (1) و (2) $\rightarrow DF = [4, 16]$ ✓	3
الف) $\cos y = x - 3$ $-1 \leq x - 3 \leq 1$ $2 \leq x \leq 4$ $2 \leq x \leq 4$ $-4 \leq x \leq -2$ $DF = [-4, -2] \cup [2, 4]$ ✓	4
ب) $y = \arcsin(x^2 + 3x + 1)$ $-1 \leq x^2 + 3x + 1 \leq 1$ $\rightarrow x^2 + 3x + 1 \leq 1$ $\rightarrow x^2 + 3x \leq 0$ $\rightarrow x(x+3) \leq 0$ $\rightarrow -3 \leq x \leq 0$ $DF = [-3, 0] \cup [-1, 0]$ ✓	4
الف) $y = \log_3 x^2 - 4$ $x^2 - 4 > 0$ $x^2 > 4$ $x > 2 \cup x < -2$ $3 > 0$ $3 \neq 1$ $DF = (-\infty, 2) \cup (2, +\infty)$ ✓	5
ب) $y = \log_2 2 - x$ $2 - x > 0$ $x < 2$ $\rightarrow -2 < x < 2$ $2 > 0$ $2 \neq 1$ $DF = (-2, 2)$ ✓	5

$a) y = \log_{x-3} \omega - x \quad \omega - x > 0 \quad x < \omega$ $x - 3 \neq 1 \quad x \neq 4 \quad , \quad x - 3 > 0 \quad x > 3$ $Df = (3, \omega) - \{4\}$	6
$b) y = \log_{x+3} x^2 - 1 \quad x^2 - 1 > 0 \quad x^2 > 1 \quad x > 1 \cap x < -1$ $x + 3 \neq 1 \quad x \neq -4 \quad , \quad x + 3 > 0 \quad x > -3$ $Df = (-3, -1) \cup (1, +\infty) - \{-4\}$	7
$a) y = \log \frac{x^2 - 4x + 3}{x - 3} \quad \frac{x^2 - 4x + 3}{x - 3} > 0 \quad \frac{(x-1)(x-3)}{(x-3)} > 0 \quad x - 1 > 0 \quad x > 1$ $Df = (1, +\infty) - \{3\}$	8
$b) y = \log \frac{x+3}{x-4} \quad \frac{x+3}{x-4} > 0 \quad (x > -3) \cap (x < 4) \rightarrow x \in (-3, 4)$ $x + 4 \rightarrow x + 4 \neq 1 \quad x \neq -5 \quad , \quad x + 4 > 0 \quad x > -4$ $Df = (-3, 4) - \{-5\}$	9
$a) y = \sqrt{3 - \log_2(x-2)} \quad x - 2 > 0 \quad x > 2$ $3 - \log_2(x-2) \geq 0 \quad \log_2(x-2) \leq 3 \quad x - 2 \leq 8$ $x \leq 10 \quad Df = (2, 10]$	10
$b) y = \log(\sqrt{2} \log_3 x - 1) \quad \sqrt{2} \log_3 x - 1 > 0 \quad \log_3 x > \frac{1}{\sqrt{2}} \quad x > \sqrt{3}$ $Df = (\sqrt{3}, +\infty)$	11
$y = \frac{3}{x^x - 1} \quad Df = \mathbb{R} - \{0\} \quad (b)$ $x^x - 1 \neq 0 \quad x^x \neq 1$	12
$y = \frac{3}{x^x - 1} \quad Df = \mathbb{R} \quad (a)$	13
$y = \frac{3}{x^x - 2} \quad Df = \mathbb{R} - \left\{\log_2 \frac{3}{2}\right\}$ $x^x - 2 \neq 0 \quad x^x \neq 2$	14
$y = \frac{3}{x^x - 2} \quad Df = \mathbb{R} - \left\{\log_2 \frac{3}{2}\right\}$ $x^x - 2 \neq 0 \quad x^x \neq 2$	15
$a) y = (\lfloor x+1 \rfloor)! \quad \lfloor x+1 \rfloor \in \mathbb{N} \rightarrow \lfloor x \rfloor \leq \omega - 1 \rightarrow x \in \frac{\omega-1}{2}$ $Df = \left\{x / x = \frac{k-1}{2}, k \in \mathbb{N}\right\}$	16
$b) y = \left(\frac{x^x - 2}{x - \omega}\right) \mid \frac{x^x - 2}{x - \omega} \in \mathbb{N} \quad x^x \omega - \omega \omega = x^x - 2 \quad x^x \omega - x^x = \omega \omega - 2$ $x(x^x - 2) = \omega \omega - 2 \quad x \in \frac{\omega \omega - 2}{x^x - 2} \quad Df = \left\{x / x = \frac{\omega k - 2}{x^k - 2}, k \in \mathbb{N}\right\}$	17