

الف) $y = \sqrt{2 \sinh x - 1} \Rightarrow 2 \sinh x \geq 1 \Rightarrow \sinh x \geq \frac{1}{2} \Rightarrow D_f = \left[\frac{1}{2} \ln 2, \frac{1}{2} \ln 2 + \frac{\ln 3}{2} \right]$	5
ب) $\sqrt{\cos x - 1} \Rightarrow \cos x \geq 1 \Rightarrow x = \{2k\pi\} \Rightarrow D_f = \{2k\pi\}$	6
الف) $\cos y = x - 2 \Rightarrow -1 \leq x - 2 \leq 1 \Rightarrow 1 \leq x \leq 3$ $\Rightarrow \begin{cases} 1 \leq x \leq 3 \\ -3 \leq x \leq -1 \end{cases} \quad D_f = [-3, -1] \cup [1, 3]$	
ب) $y = \arcsin(\sinh(x^2 + x + 1)) \Rightarrow -1 \leq \sinh(x^2 + x + 1) \leq 1 \Rightarrow \begin{cases} x^2 + x + 1 \leq 1 \\ x^2 + x + 1 \geq -1 \end{cases}$ $\Rightarrow \begin{cases} x^2 + x \leq 0 \Rightarrow x(x+1) \leq 0 \\ x^2 + x + 2 \geq 0 \Rightarrow (x+1)^2 + 1 > 0 \end{cases} \Rightarrow \begin{matrix} -1 & 0 \\ + & - \\ - & + \end{matrix} \Rightarrow D_f = [-1, 0] \cup [1, 2]$	7
الف) $y = \sqrt{2 - \log_2 x} \Rightarrow 2 - \log_2 x \geq 0 \Rightarrow \log_2 x \leq 2 \Rightarrow x - 2 \leq 9$ $\Rightarrow x \leq 11, x > 2 \Rightarrow D_f = (2, 11]$	8
ب) $y = \log_2(x^2 - x) \Rightarrow x^2 - x > 0 \Rightarrow x(x-1) > 0 \Rightarrow \begin{matrix} -1 & 0 & 1 \\ - & + & - \end{matrix}$ $D_f = (-1, 0) \cup (1, \infty)$	9
الف) $y = \frac{x}{x^2 + 1} \Rightarrow D_f = \mathbb{R}$	
ب) $y = \frac{x}{x^2 - 1} \Rightarrow D_f = \mathbb{R} - \{0\}$	
ج) $y = \frac{x}{x^2 - 2} \Rightarrow D_f = \mathbb{R} - \{\log_2 2\}$	
د) $y = \frac{x}{x^2 - 3} \Rightarrow D_f = \mathbb{R} - \{\log_2 3\}$	
الف) $y = f(n+1) ! \Rightarrow f(n+1) \in \mathbb{N} \Rightarrow f(n) = k+1 \Rightarrow n = \frac{k+1}{f}$ $D_f = \left\{ n \mid n = \frac{k+1}{f}, k \in \mathbb{N} \right\}$	10
ب) $y = \left(\frac{f^2 - 2}{f^2 - \omega} \right) ! \Rightarrow \frac{f^2 - 2}{f^2 - \omega} = k \Rightarrow f^2 - 2 = f^2 k - \omega k \Rightarrow f^2 - f^2 k = -\omega k + 2$ $\Rightarrow (f^2 - f^2 k) \Rightarrow n = \omega k - 2 \Rightarrow n = \frac{\omega k - 2}{f^2 - f^2 k}$ $D_f = \left\{ n \mid n = \frac{\omega k - 2}{f^2 - f^2 k}, k \in \mathbb{N} \right\}$	

به دلیل تفریق نام نام خانوادگی غیر می ضرورت ظاهر شد.

الف) $\sqrt{\frac{x^3 - x}{x^3 - x}} \Rightarrow \sqrt{\frac{x(x-1)}{x(x^2-1)}} \Rightarrow \frac{-1}{-1} + \frac{0}{0} + \frac{1}{1} + \frac{1}{1}$ $D_f = (-1, 0) \cup (0, 1) \cup [1, +\infty)$ یا $(-1, 1) \cup [1, +\infty) - \{0\}$	۱
ب) $\sqrt{\frac{x^3 - x^3}{x^3 - x}} = \sqrt{\frac{x^3(x+1)(x-1)}{x(x+1)(x-1)}} \Rightarrow \frac{-1}{-1} + \frac{0}{0} + \frac{1}{1} + \frac{1}{1} \Rightarrow D_f = \mathbb{R} - \{-1, 0, 1\}$	
الف) $y = \frac{x+1}{\sqrt{x+1x}} \Rightarrow \frac{-1}{-1} - \frac{0}{0} + \frac{1}{1} \Rightarrow D_f = (0, +\infty)$	۲
ب) $y = \frac{1}{\sqrt{x+1x}} \Rightarrow \sqrt{x+1x} \Rightarrow x > 0 \Rightarrow D_f = (0, +\infty)$	
الف) $y = \sqrt{2-x} \Rightarrow 2-x \geq 0 \Rightarrow [x] \leq 2 \Rightarrow x \leq 2$ $D_f = (-\infty, 2]$	۳
ب) $\frac{1}{\sqrt{2-x}} \Rightarrow 2-x > 0 \Rightarrow [x] < 2 \Rightarrow x < 2 \Rightarrow D_f = (-\infty, 2)$	
الف) $y = \sqrt{[x-\frac{1}{p}] + [x+\frac{p}{p}]} \Rightarrow [x+\frac{p}{p}] = [x-\frac{1}{p}] + 1$ $2[x-\frac{1}{p}] + 1 \geq 0 \Rightarrow [x-\frac{1}{p}] \geq -\frac{1}{p} \Rightarrow x-\frac{1}{p} \geq 0 \Rightarrow x \geq \frac{1}{p}$ $D_f = [\frac{1}{p}, +\infty)$	۴
ب) $y = \sqrt{[x-\frac{1}{p}] + [x+\frac{p}{p}]} = \sqrt{[a] + [a]} \Rightarrow [a] + [a] \geq 0 \Rightarrow \begin{cases} a \in \mathbb{Z} \Rightarrow [a] + [-a] = 0 \\ a \notin \mathbb{Z} \Rightarrow [a] + [-a] = -1 \end{cases}$ $x-\frac{1}{p} \in \mathbb{Z} \Rightarrow x-\frac{1}{p} = k \Rightarrow D_f = \{x \mid x = k + \frac{1}{p}, k \in \mathbb{Z}\}$	
الف) $y = \frac{p}{\sin x - 1} \Rightarrow \sin x \neq 1 \Rightarrow x \neq 2k\pi + \frac{\pi}{2} \Rightarrow D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{2} \mid k \in \mathbb{Z}\}$	۵
ب) $y = \frac{p}{2\sin x - 1} \Rightarrow 2\sin x \neq 1 \Rightarrow \sin x \neq \frac{1}{2} \Rightarrow \sin x \neq \pm \frac{\sqrt{3}}{2} \Rightarrow x = \frac{k\pi}{2} + \frac{\pi}{6}$ $D_f = \mathbb{R} - \{\frac{k\pi}{2} + \frac{\pi}{6} \mid k \in \mathbb{Z}\}$	