

الف) $\sqrt{\frac{x^2-5x}{x^3-x}} \geq 0 \Rightarrow \frac{x(x-5)}{x(x+1)(x-1)} \geq 0 \Rightarrow$ $\Rightarrow D_f = (-1, 0) \cup (0, 1) \cup [5, +\infty)$ (۲) ✓ ب) $\sqrt{\frac{x^2-x^3}{x^3-x}} \geq 0 \Rightarrow \frac{x^2(x-1)}{x(x+1)(x-1)} \geq 0 \Rightarrow$ $\Rightarrow D_f = \mathbb{R} - \{-1, 0, 1\}$	۱
الف) $x + x > 0 \Rightarrow x > -x \Rightarrow D_f = \mathbb{R}^+$ ب) $x x > 0 \Rightarrow x \neq 0 \wedge x \neq 0 \Rightarrow D_f = \mathbb{R}^+$ (۲) ✓	۲
الف) $2 - [x] \geq 0 \Rightarrow [x] \leq 2 \Rightarrow D_f = (-\infty, 2)$ ب) $2 - [x] > 0 \Rightarrow 2 > [x] \Rightarrow D_f = (-\infty, 2)$ (۲) ✓	۳
الف) $[x - \frac{1}{p}] + [x + \frac{1}{p}] \geq 0 \Rightarrow D_f = \mathbb{R}$ ب) $[x - \frac{1}{p}] + [\frac{1}{p} - x] \geq 0 \Rightarrow D_f = \mathbb{R}$ $x - \frac{1}{p} \in \mathbb{Z} \Rightarrow x \in \mathbb{Z} + \frac{1}{p} \Rightarrow [x + \frac{1}{p}] \geq \frac{1}{p} \Rightarrow x + \frac{1}{p} \geq 1 \Rightarrow x \geq \frac{p-1}{p}$ $x = \{x \mid x = k + \frac{1}{p}, k \in \mathbb{Z}\}$	۴
الف) $\sin^2 x - 1 \neq 0 \Rightarrow \sin^2 x \neq 1 \Rightarrow D_f = \mathbb{R} - \{\frac{\pi}{2}, \frac{3\pi}{2}\}$ ب) $2 \sin^2 x - 1 \neq 0 \Rightarrow 2 \sin^2 x \neq 1 \Rightarrow \sin^2 x \neq \frac{1}{2} \Rightarrow \sin x \neq \pm \frac{1}{\sqrt{2}}$ $\Rightarrow D_f = \mathbb{R} - \{\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}\}$ (۱) ✓	۵

الف) $2 \sin x - 1 \geq 0 \Rightarrow \sin x \geq \frac{1}{2} \Rightarrow D_f = [2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}]$ ب) $\cos x - 1 \geq 0 \Rightarrow \cos x \geq 1 \Rightarrow D_f = [2k\pi]$ (2) ✓	6
الف) $-1 \leq -2 x \leq 1 \Rightarrow 2 \leq x \leq 4 \Rightarrow D_f = [2, 4] \cup [-4, -2]$ ب) $-1 \leq x^2 + 3x + 1 \leq 1 \Rightarrow x^2 + 3x + 1 \geq 0 \Rightarrow x \leq -2 \text{ یا } x \geq 0$ $\Rightarrow x^2 + 3x \leq 0 \Rightarrow -3 \leq x \leq 0$ $\Rightarrow D_f = [-3, -2] \cup [0, 0]$ (1, 2) ✓ جدول تعین علامت بنویس	7
الف) $2 - \log_p x^{-2} \geq 0 \Rightarrow \log_p x^{-2} \leq 2 \Rightarrow x^{-2} \leq p^2 \Rightarrow x \leq 11$ یا $x^{-2} > 0 \Rightarrow x > 2 \Rightarrow D = 11 \geq x > 2$ ب) $x^3 - x > 0 \Rightarrow x(x+1)(x-1) > 0 \Rightarrow x \in (-1, 0) \cup (1, \infty)$ (2) ✓	8
الف) $x^x \neq -1 \Rightarrow D_f = \mathbb{R}$ (2) ✓	9
ب) $x^x \neq 1 \Rightarrow D_f = \mathbb{R} - \{0\}$	
الف) $x^x \neq 2 \Rightarrow D = \mathbb{R} - \{\frac{1}{2}\}$	10
ب) $x^x \neq 2 \Rightarrow D_f = \mathbb{R} - \{1, \log_{\frac{1}{2}} 2\}$	
الف) $\{x+1\} < W \Rightarrow x \in \frac{W+1}{2} \Rightarrow D_f = \{x \mid x = \frac{k+1}{2}, k \in W\}$ ب) $rx - 2 = 2xW - 2W$ $rx = 2Wx - 2W + 2$ $x = \frac{2Wx - 2W + 2}{r}$ (1) ✓ $\Rightarrow D_f = \{x \mid x = \frac{2Wk - 2W + 2}{r}, k \in W\}$	10

$q = \frac{-2W+2}{r-2W} \Rightarrow D_f = \{x \mid q = \frac{2k-2}{r-2W}, k \in W\}$