

نام و نام خانوادگی: شماره کلاس: (نام و نام خانوادگی)

الف) $y = \sqrt{\frac{x^4 - 4x}{x^3 - x}} = \sqrt{\frac{x(x-4)}{x(x-1)(x+1)}} \geq 0$ $D_f = (-1, 0) \cup (0, 1) \cup [4, +\infty)$

ب) $y = \sqrt{\frac{x^5 - x^3}{x^3 - x}} = \sqrt{\frac{x^3(x-1)(x+1)}{x(x-1)(x+1)}} \geq 0$ $D_f = \mathbb{R} - \{-1, 0, 1\}$

الف) $y = \frac{x+1}{\sqrt{x+|x|}} \Rightarrow x+|x| > 0 \Rightarrow |x| > -x$ $D_f = \mathbb{R}^+$

ب) $y = \frac{1}{\sqrt{x|x|}}$ $|x| > 0$ $D_f = \mathbb{R}^+$

الف) $y = \sqrt{2-[x]}$ $2-[x] \geq 0$ $[x] \leq 2 \Rightarrow x < 3$ $D_f = (-\infty, 3)$

ب) $y = \frac{1}{\sqrt{2-[x]}}$ $2-[x] > 0$ $[x] < 2 \Rightarrow x < 2$ $D_f = (-\infty, 2)$

الف) $y = \sqrt{[x - \frac{1}{3}] + [x + \frac{1}{3}]} \Rightarrow [x - \frac{1}{3}] + [x + \frac{1}{3}] \geq 0$
 $[x + \frac{1}{3}] = [x - \frac{1}{3}] + 1 \Rightarrow [x - \frac{1}{3}] + ([x - \frac{1}{3}] + 1) \geq 0$
 $= 2[x - \frac{1}{3}] + 1 \geq 0 \Rightarrow 2[x - \frac{1}{3}] \geq -1 \Rightarrow [x - \frac{1}{3}] \geq -\frac{1}{2}$

ب) $y = \sqrt{[x - \frac{1}{3}] + [-x + \frac{1}{3}]}$ $[a] + [-a] = 0$ $x - \frac{1}{3} \in \mathbb{Z} \Rightarrow D_f = \{x | x = k + \frac{1}{3}, k \in \mathbb{Z}\}$

الف) $y = \frac{1}{\sin x - 1}$ $\sin x - 1 \neq 0$ $\sin x \neq 1$ $D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{2}\}$

ب) $y = \frac{1}{\sin^2 x - 1}$ $\sin^2 x - 1 \neq 0$ $\sin^2 x \neq 1$ $\sin^2 x \neq \frac{1}{4}$
 $\sin x \neq \pm \frac{\sqrt{2}}{2}$ $D_f = \mathbb{R} - \{k\pi + \frac{\pi}{4}, k\pi + \frac{3\pi}{4}\}$

الف) $y = \sqrt{2 \sin x - 1}$ $2 \sin x - 1 \geq 0 \Rightarrow 2 \sin x \geq 1$
 $\sin x \geq \frac{1}{2}$ $D = \left[2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6} \right]$ ٤
 ب) $y = \sqrt{\cos x - 1}$ $\cos x - 1 \geq 0 \Rightarrow \cos x \geq 1$
 $D_P = \{2k\pi \mid k \in \mathbb{Z}\}$

الف) $\cos y = |x| - 3$ $-1 \leq \cos y \leq 1 \Rightarrow -1 \leq |x| - 3 \leq 1$ $2 \leq |x| \leq 4$
 $D = [-4, -2] \cup [2, 4]$ *محدد بتعين علامت الجذر التربيعي*
 ب) $y = \arcsin(x^2 + 3x + 1)$ $x^2 + 3x + 1 \leq 1$ $x^2 + 3x \leq 0$ $x(x+3) \leq 0 \Rightarrow -3 \leq x \leq 0$
 $-1 \leq x^2 + 3x + 1 \leq 1$ $x^2 + 3x + 2 \geq 0$ $(x+1)(x+2) \geq 0$ $x \leq -2$ $x \geq -1$
 $D = [-3, -2] \cup [-1, 0]$

الف) $y = \sqrt{2 - \log_p(x-2)}$ $x-2 > 0 \Rightarrow x > 2$
 $2 - \log_p(x-2) \geq 0 \Rightarrow \log_p(x-2) \leq 2$
 ب) $y = \log(x^3 - x)$ $x-2 \leq 2^2 \Rightarrow x \leq 11$ $x > 2 \Rightarrow D = (2, 11]$
 $x^3 - x > 0 \Rightarrow x(x-1)(x+1) > 0$ $(-1, 0) \cup (0, 1) \cup (1, \infty)$

الف) $y = \frac{3}{x^2 + 1}$ $x^2 + 1 \neq 0 \Rightarrow x^2 \neq -1$ $D_P = \mathbb{R}$
 ب) $\frac{3}{x^2 - 1}$ $x^2 - 1 \neq 0 \Rightarrow x \neq \pm 1$ $x \neq 0$ $D_P = \mathbb{R} - \{0\}$
 ج) $\frac{3}{x^2 - 2}$ $x^2 - 2 \neq 0 \Rightarrow x \neq \pm \sqrt{2}$ $x \neq \frac{1}{\sqrt{2}}$ $D_P = \mathbb{R} - \{\pm \sqrt{2}, \pm \frac{1}{\sqrt{2}}\}$
 د) $\frac{3}{x^2 - 3}$ $x^2 - 3 \neq 0 \Rightarrow x \neq \pm \sqrt{3}$ $x = \log_3 3$ $D = \mathbb{R} - \{\log_3 3\}$

الف) $y = (x+1)!$ $x+1 \in \mathbb{W} \Rightarrow x \in \mathbb{W} - 1$ $x \in \frac{\mathbb{W} - 1}{1}$
 $D = \{x \mid x = k - 1, k \in \mathbb{W}\}$
 ب) $y = \left(\frac{x^2 - 2}{x^2 - 1} \right)!$ $\frac{x^2 - 2}{x^2 - 1} \in \mathbb{W}$ $x^2 - 2 \in x^2 \mathbb{W} - \mathbb{W}$
 $x^2 - 2 \in \mathbb{W}$ $x^2 - 2 \in \mathbb{W} - \mathbb{W}$
 $x(x^2 - 2) \in \mathbb{W} - \mathbb{W}$
 $x \in \mathbb{W} - \mathbb{W}$ $x \in \frac{\mathbb{W} - 2}{x^2 - 1}$
 $D = \{x \mid x = \frac{k-2}{x^2 - 1}, k \in \mathbb{W}\}$