

به دلیل نفوذ نام از نام خانوادگی و تمایز با نام خانوادگی

الف $u(u-4) = \frac{u-4}{(u-1)(u+1)}$ $\frac{u-4}{(u-1)(u+1)} \geq 0$ $(-100) \cup (0, 1) \cup [600, \infty)$ $D = \mathbb{R} - \{-100, 1\}$ ✓	ب $\frac{u^2(u^2-1)}{u(u^2-1)} = u^2$ $u \neq -100, 1$ $D = \mathbb{R} - \{-100, 1\}$ 1
الف $u + u > 0$ $u < 0$ $u \geq 0$ $D = (0, \infty)$ ✓	ب $y = \frac{1}{\sqrt{u} u }$ $u u > 0$ $D = (0, \infty)$ 2
الف $y = \sqrt{4- u }$ $4- u \geq 0$ $[u] \leq 4 \Rightarrow u \leq 4$ $D = (-\infty, 4]$ ✓	ب $y = \frac{1}{\sqrt{4-[u]}}$ $4-[u] > 0$ $[u] < 4 \Rightarrow u < 4$ $D = (-\infty, 4)$ 3
الف $[u + \frac{1}{u}] = [u - \frac{1}{u} + 1] = [u - \frac{1}{u}] + 1$ $[u - \frac{1}{u}] + 1 \geq 0$ $[u - \frac{1}{u}] \geq 0 \Rightarrow D = [\frac{1}{u}, \infty)$ ✓	ب $t = u - \frac{1}{u}$ $[t] + [-t]$ $u - \frac{1}{u} \in \mathbb{Z}$ $D = \{ \frac{1}{u} + u \mid u \in \mathbb{Z} \}$ 4
الف $\sin u \neq 1$ $u \neq \frac{\pi}{2} + 2k\pi$ $D = \mathbb{R} - \{ \frac{\pi}{2} + 2k\pi \mid k \in \mathbb{Z} \}$ ✓	ب $y = \frac{1}{\sqrt{\sin^2 u - 1}}$ $\sin^2 u - 1 \neq 0$ $\sin^2 u \neq 1$ $u \neq \frac{\pi}{2} + \frac{k\pi}{2}$ $D = \mathbb{R} - \{ \frac{\pi}{2} + \frac{k\pi}{2} \mid k \in \mathbb{Z} \}$ 5

$y = \sqrt{\sin x - 1}$ $\sqrt{\sin x - 1} \geq 0$ $\sin x \geq 1$ $D = \bigcup_{k \in \mathbb{Z}} \left[\frac{x}{5} + 2k\pi, \frac{5x}{6} + 2k\pi \right]$	حل $\cos x - 1 \geq 0$ $\cos x \geq 1$ $\cos x = 1$ $D = \{x \mid k\pi, k \in \mathbb{Z}\}$
$\cos y = a - 3$ $-1 \leq \cos y \leq 1$ $-1 \leq a - 3 \leq 1$ $2 \leq a \leq 4$ $D = [-4, -2] \cup [2, 4]$	حل $-1 \leq a^2 + 3a + 1 \leq 1$ $a^2 + 3a + 1 \geq 0 \Rightarrow (a+1)(a+2) \geq 0$ $a \leq -2 \quad \text{or} \quad a \geq -1$ $a^2 + 3a \leq 0 \Rightarrow a(a+3) \leq 0$ $-3 \leq a \leq 0$ $D = [-3, -2] \cup [-1, 0]$
$a - 2 > 0 \Rightarrow a > 2$ $2 - \log_2(a-2) \geq 0$ $\log_2(a-2) \leq 2$ $a - 2 \leq 4$ $D = (2, 11]$	حل $y = \log(n^2 - n)$ $n^2 - n > 0$ $n(n-1)(n+1) > 0$ $D = (-1, 0) \cup (1, +\infty)$
$e^{n+1} \neq 0$ $D = \mathbb{R}$	حل $e^n - 1 \neq 0 \Rightarrow e^n \neq 1 \Rightarrow n \neq 0$ $D = \mathbb{R} - \{0\}$
$e^n \neq 2 \Rightarrow n \neq \log_e 2 = \frac{1}{e}$ $D = \mathbb{R} - \left\{ \frac{1}{e} \right\}$	$y = \frac{e^x}{e^x - 2}$ $D = \mathbb{R} - [\log_e 2]$ $e^n \neq 2 \Rightarrow n \neq \log_e 2$
$e^{n+1} = n$ و $n = 0, 1, 2, \dots$ $D = \left\{ \frac{n-1}{e} \mid n = 0, 1, 2, \dots \right\}$ $D = \left\{ -\frac{1}{e}, 0, \frac{1}{e}, \frac{2}{e}, \dots \right\}$	$\frac{e^n - 2}{e^n - 2} = n$ و $n = 1, 2, 3, \dots$ $e^n - 2 = e^n n - 2n$ $n(e^n - 2n) = 2 - 2n$ $n = \frac{2 - 2n}{e^n - 2n}$ و $n = 0, 1, 2, \dots$ $D = \left\{ \frac{2 - 2n}{e^n - 2n} \mid n = 0, 1, 2, \dots \right\}$