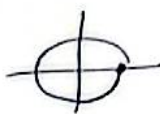


الف) $y = \sqrt{\frac{n^2-4n}{n^3-n}}$ $\rightarrow \frac{n^2-4n}{n^3-n} \geq 0$ ب) $y = \sqrt{\frac{n^3-n^2}{n^3-n}}$ $\frac{n^3-n^2}{n^3-n} \geq 0$	$n^2-4n \geq 0$ $n^3-n \geq 0$ $n(n-4) \geq 0$ $n(n^2-1) \geq 0$ $D_f = (-\infty, -1) \cup (0, 1) \cup (4, \infty)$ $n^3-n^2 \geq 0$ $n^3-n \geq 0$ $n^2(n-1) \geq 0$ $n(n^2-1) \geq 0$ $D_f = [-1, 0] \cup (1, \infty)$	1
الف) $y = \frac{n+1}{\sqrt{n+ n }}$ $n+ n > 0$ $\frac{ n }{0} > -n$ ب) $y = \frac{1}{\sqrt{ n }}$ $n n > 0$ $n \neq 0$	$D_f = (0, \infty)$ اعداد صحیح $\rightarrow$ چه اعدادی؟ $D_f = (0, \infty)$	2
الف) $y = \sqrt{2-[n]}$ $2-[n] \geq 0$ $-[n] \geq -2$ ب) $y = \frac{1}{\sqrt{2-[n]}}$ $2-[n] > 0$ $-[n] > -2$	$[n] \leq 2$ $D_f = (-\infty, 3)$ $[n] < 2$ $D_f = (-\infty, 2)$	3
الف) $y = \sqrt{[n-\frac{1}{k}] + [n-\frac{1}{k}]} = [n-\frac{1}{k}] + [n+\frac{1}{k}] \geq 0$ ب) $y = \sqrt{[n-\frac{1}{k}] + [n+\frac{1}{k}]}$ $[a] + [-a] = 0$ $a \in \mathbb{Z}$	$[n+\frac{1}{k}] - 1 + [n+\frac{1}{k}] \geq 0$ $2[n+\frac{1}{k}] \geq 1$ $[n+\frac{1}{k}-1] + [n+\frac{1}{k}] \geq 0$ $[n+\frac{1}{k}] \geq \frac{1}{k}$ $D_f = \{n n = k - \frac{1}{k}, k \in \mathbb{Z}\}$ $n + \frac{1}{k} \geq 1$ $n \geq \frac{1}{k}$ $D_f = [\frac{1}{k}, \infty)$	4
الف) $y = \frac{r}{\sin n - 1}$ $\sin n - 1 \neq 0$ $\sin n \neq 1$ ب) $y = \frac{r}{r \sin^2 n - 1}$ $r \sin^2 n - 1 \neq 0$ $r \sin^2 n \neq 1$ $\sin^2 n \neq \frac{1}{r}$ $\sin n \neq \pm \frac{1}{\sqrt{r}} \rightarrow \sin n \neq \pm \frac{\sqrt{r}}{r}$	$D_f = \mathbb{R} - \{r k \pi + \frac{\pi}{4}\}$ $D_f = \{k \pi \pm \frac{\pi}{4}\}$	5

الف) $y = \sqrt{r \sin \theta - 1}$ $r \sin \theta - 1 \geq 0$ $r \sin \theta \geq 1$ $\sin \theta \geq \frac{1}{r}$ $\frac{1}{r} \leq \sin \theta \leq 1$  $\left[2k\pi + \frac{\pi}{6}, 2k\pi + \pi - \frac{\pi}{6}\right]$	ب) $y = \sqrt{\cos \theta - 1}$ $\cos \theta - 1 \geq 0$ $\cos \theta \geq 1$  $\{2k\pi\}$ cos مقادیر از 1 کمتر یا مساوی است پس فقط در 0 تعریف است
الف) $\cos y = x - 2$ $y = \arccos(x - 2)$ $-1 \leq x - 2 \leq 1$ $x - 2 \leq 1 \Rightarrow x \leq 3$ $x - 2 \geq -1 \Rightarrow x \geq 1$ $-3 \leq x \leq 3$ $x \geq 1$ $x \leq -3$ $D_f = [-3, -1] \cup [1, 3]$	ب) $y = \arcsin(x^2 + 4x + 1)$ $x^2 + 4x + 1 \leq 1$ $x^2 + 4x \leq 0$ $x(x + 4) \leq 0$ $-4 \leq x \leq 0$ $x^2 + 4x + 1 \geq -1$ $x^2 + 4x + 2 \geq 0$ $(x + 1)(x + 2) \geq 0$ $x \leq -2$ or $x \geq -1$ $D_f = [-4, -2] \cup [-1, 0]$
الف) $y = \sqrt{2 - \log_2(m - 2)}$ $m - 2 > 0$ $m > 2$ $2 - \log_2(m - 2) \geq 0$ $-\log_2(m - 2) \geq -2$ $\log_2(m - 2) \leq 2$ $m - 2 \leq 4$ $m \leq 6$ $D_f = (2, 6]$	ب) $y = \log(m^2 - m)$ $m^2 - m > 0$ $m(m - 1) > 0$ $m < 0$ or $m > 1$ $D_f = (-\infty, 0) \cup (1, \infty)$
الف) $y = \frac{2}{e^n + 1}$ $e^n + 1 \neq 0$ $e^n \neq -1$ $D_f = \mathbb{R}$	ب) $y = \frac{2}{e^n - 1}$ $e^n - 1 \neq 0$ $e^n \neq 1$ $n \neq 0$ $D_f = \mathbb{R} - \{0\}$ ج) $y = \frac{2}{e^n - 2}$ $e^n - 2 \neq 0$ $e^n \neq 2$ $n \neq \log_e 2$ $D_f = \mathbb{R} - \{\log_e 2\}$ د) $y = \frac{2}{e^n - 3}$ $e^n - 3 \neq 0$ $e^n \neq 3$ $n \neq \log_e 3$ $D_f = \mathbb{R} - \{\log_e 3\}$
الف) $y = (n+1)!$ $f(n+1) \in W \rightarrow f(n) \in W - 1 \rightarrow n \in \frac{W-1}{f}$ $D_f = \{n n = \frac{k-1}{f}, k \in W\}$	
ب) $\left(\frac{kn - r}{r^n - a}\right)!$ $\frac{kn - r}{r^n - a} \in W$ $kn - r = r^n W - aW$ $kn - r = r^n W - aW$ $n = \frac{-aW + r}{r - r^n}$ $D_f = \{n n = \frac{ak - r}{rk - r^n}, k \in W\}$	