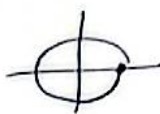


الف) $y = \sqrt{\frac{x^2-4x}{x^3-x}}$ $\rightarrow \frac{x^2-4x}{x^3-x} \geq 0$ $\frac{x^2-4x}{x(x-1)(x+1)} \geq 0$ $\frac{x^2-4x}{x(x-1)(x+1)} \geq 0$ ب) $y = \sqrt{\frac{x^3-x^2}{x^3-x}}$ $\frac{x^3-x^2}{x^3-x} \geq 0$ $\frac{x^2(x-1)}{x(x-1)(x+1)} \geq 0$	$x^2-4x \geq 0$ $x^3-x \geq 0$ $x(x-1)(x+1) \geq 0$ $x^3-x^2 \geq 0$ $x^3-x \geq 0$ $x^2(x-1) \geq 0$ $x(x-1)(x+1) \geq 0$ $D_f = (-\infty, -1) \cup (0, 1) \cup (1, \infty)$ $D_f = (-1, 0) \cup (1, \infty)$	۱
الف) $y = \frac{x+1}{\sqrt{x+ x }}$ $x+ x > 0$ $x > -x$ $D_f = (0, \infty)$ اعداد صحیح $\rightarrow$ چه عددی؟	ب) $y = \frac{1}{\sqrt{ x }}$ $x > 0$ $x \neq 0$ $D_f = (0, \infty)$ اعداد صحیح $x =$	۲
الف) $y = \sqrt{2-[x]}$ $2-[x] \geq 0$ $-[x] \geq -2$ $[x] \leq 2$ $D_f = (-\infty, 3)$	ب) $y = \frac{1}{\sqrt{2-[x]}}$ $2-[x] > 0$ $-[x] > -2$ $[x] < 2$ $D_f = (-\infty, 2)$	۳
الف) $y = \sqrt{[n-\frac{1}{k}] + [n+\frac{1}{k}]} = [n-\frac{1}{k}] + [n+\frac{1}{k}] \geq 0$ $[n+\frac{1}{k}] - 1 + [n+\frac{1}{k}] \geq 0$ $2[n+\frac{1}{k}] \geq 1$ $[n+\frac{1}{k}] \geq \frac{1}{2}$ $n+\frac{1}{k} \geq 1$ $n \geq 1-\frac{1}{k}$ $D_f = [1-\frac{1}{k}, \infty)$ ب) $y = \sqrt{[n-\frac{1}{k}] + [n+\frac{1}{k}]}$ $[a] + [-a] = 0$ $a \in \mathbb{Z}$ $n \neq \frac{1}{k} \rightarrow n \in \mathbb{Z} + \frac{1}{k}$ $D_f = \{n n = k + \frac{1}{k}, k \in \mathbb{Z}\}$	$[n-\frac{1}{k}] + [n+\frac{1}{k}] \geq 0$ $[n-\frac{1}{k}] + [-(n-\frac{1}{k})]$	۴
الف) $y = \frac{r}{\sin^{r-1} \theta}$ $\sin^{r-1} \theta \neq 0$ $\sin \theta \neq 1$ $D_f = \mathbb{R} - \{r\pi + \frac{\pi}{2}\}$	ب) $y = \frac{r}{r \sin^{r-1} \theta}$ $r \sin^{r-1} \theta \neq 0$ $r \sin^r \theta \neq 1$ $\sin^r \theta \neq \frac{1}{r}$ $\sin \theta \neq \pm \frac{1}{\sqrt[r]{r}} \rightarrow \sin \theta \neq \pm \frac{\sqrt[r]{r}}{r}$	۵

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) $\cos y = x - 2$ $y = \arccos(x - 2)$ $-1 \leq x - 2 \leq 1$ $x - 2 \leq 1 \Rightarrow x \leq 3$ $x \geq -1$ $-3 \leq x \leq 3$ $D_f = [-3, 3]$	ب) $y = \arcsin(x^2 + 4x + 1)$ $x^2 + 4x + 1 \leq 1$ $x^2 + 4x \leq 0$ $x(x + 4) \leq 0$ $x \in [-4, 0]$ $x^2 + 4x + 1 \geq -1$ $x^2 + 4x + 2 \geq 0$ $(x + 1)(x + 2) \geq 0$ $x \in (-\infty, -2] \cup [-1, \infty)$ $D_f = [-4, 0] \cap (-\infty, -2] \cup [-1, \infty) = [-4, -2] \cup [-1, 0]$
الف) $y = \sqrt{r - \log_2(m-r)}$ $m - r \geq 0$ $r \geq 0$ $r - \log_2(m-r) \geq 0$ $-\log_2(m-r) \geq -r$ $\log_2(m-r) \leq r$ $m - r \leq 2^r$ $m \leq r + 2^r$ $D_f = (r, 11]$	ب) $y = \log(m^2 - m)$ $m^2 - m > 0$ $m(m - 1) > 0$ $m < 0$ or $m > 1$ $D_f = (-1, 0) \cup (1, \infty)$
الف) $y = \frac{r}{e^n + 1}$ $e^n + 1 \neq 0$ $e^n \neq -1$ $D_f = \mathbb{R}$	ب) $y = \frac{r}{e^n - 1}$ $e^n - 1 \neq 0$ $e^n \neq 1$ $n \neq 0$ $D_f = \mathbb{R} - \{0\}$ ج) $y = \frac{r}{e^n - 2}$ $e^n - 2 \neq 0$ $e^n \neq 2$ $n \neq \log_e 2$ $D_f = \mathbb{R} - \{\log_e 2\}$ د) $y = \frac{r}{e^n - 3}$ $e^n - 3 \neq 0$ $e^n \neq 3$ $n \neq \log_e 3$ $D_f = \mathbb{R} - \{\log_e 3\}$
الف) $y = (k+1)!$ $k+1 \in \mathbb{W} \rightarrow k \in \mathbb{W} - 1 \rightarrow n \in \frac{\mathbb{W}-1}{t}$ $D_f = \{n n = \frac{k-1}{t}, k \in \mathbb{W}\}$ ب) $\left(\frac{kn - r}{r - a}\right)!$ $\frac{kn - r}{r - a} \in \mathbb{W}$ $kn - r = r - a$ $kn - r - r + a = -a$ $kn - 2r + a = -a$ $kn = 2r - 2a$ $n = \frac{2r - 2a}{k}$ $D_f = \{n n = \frac{2r - 2a}{k}, k \in \mathbb{W}\}$	