

الف) $y = \frac{x+3}{2x^2+3x^2+8x+3} \xrightarrow{\text{تقسیم بر } x-1} y = \frac{x+3}{(x-1)(2x-1)(x+3)} \rightarrow D_f = \mathbb{R} - \left\{-3, \frac{1}{2}, 1\right\}$

ب) $y = \frac{x+3}{2x^2+9x^2+10x+3} \xrightarrow{\text{تقسیم بر } x+1} y = \frac{x+3}{(x+1)(2x+1)(x+3)} \rightarrow D_f = \mathbb{R} - \left\{-3, -1, -\frac{1}{2}\right\}$

الف) $y = \frac{x+3}{x^2-2x^2+2x-1} = \frac{x+3}{(x-1)(x^2-x+1)} \rightarrow D_f = \mathbb{R} - \{1\}$

ب) $y = \sqrt{\frac{x+3}{x^2-2x^2+2x-1}} = \sqrt{\frac{x+3}{(x-1)(x^2-x+1)}} \rightarrow \frac{-3}{x} + \frac{1}{x-1} + \frac{1}{x+3} \rightarrow D_f = (-\infty, -3] \cup (1, +\infty)$

$y = \frac{x}{x^2 - 5(x-1) - 2x+5}$

$\begin{cases} x \geq 1 \Rightarrow x^2 - 5x - 2x + 5 + 5 = x^2 - 7x + 10 = 0 \\ (x-2)(x-5) = 0 \end{cases}$

$\begin{cases} x < 1 \Rightarrow x^2 - 5 + 5x - 2x + 5 = x^2 + 3x = x(x+3) = 0 \\ x = -3 \end{cases}$

$D_f = \mathbb{R} - \{-3, 0, 2, 5\}$

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

ب) $y = \frac{5x^2+4}{[x]^2-2[x]-4} \Rightarrow \frac{5x^2+4}{([x]-2)([x]+1)} \rightarrow x \in (3, 4) / x \in (-1, 0)$

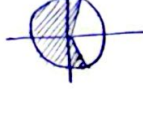
$D_f = \mathbb{R} - ((-1, 0) \cup (3, 4))$

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

$D_f = \left[\frac{1}{3}, +\infty\right)$

ب) $y = \sqrt{\left(\frac{x-1}{x}\right) + \left(\frac{x+1}{x}\right)} \rightarrow$ است. زیرا برای جواب غیر صحیح. $\frac{1}{2}$ است. این صورت جواب $\frac{1}{2}$ است. این صورت جواب $\frac{1}{2}$ است. این صورت جواب $\frac{1}{2}$ است.

$\rightarrow x \in \mathbb{Z} \rightarrow [a] + [-a] = 0 \rightarrow x - \frac{1}{x} \in \mathbb{Z} \rightarrow x \in \mathbb{Z} + \frac{1}{x} \rightarrow D_f = \left\{x \mid x = k + \frac{1}{x}, k \in \mathbb{Z}\right\}$

$\text{مثال } y = \frac{\cos n + 1}{\tan n + 1} \rightarrow \sin n \neq 0$ $\cos n \neq 0$ $\tan n \neq -1$ $\rightarrow y = \sqrt{1 - \varepsilon \sin^2 n} \rightarrow \varepsilon \sin^2 n \leq 1 \rightarrow \sin^2 n \leq \frac{1}{\varepsilon} \rightarrow -\frac{1}{\sqrt{\varepsilon}} \leq \sin n \leq \frac{1}{\sqrt{\varepsilon}}$ $D_f = \left[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right]$	 $D_f = \mathbb{R} - \left\{ \frac{k\pi}{2}, k\pi - \frac{\pi}{2} \right\}$	8
$\text{مثال } y = \sqrt{r \sin n - 1} \rightarrow \sin n \geq \frac{1}{r}$ $\rightarrow y = \sqrt{1 - r \cos n} \rightarrow \cos n \leq \frac{1}{r}$ $D_f = \left[r k \pi + \frac{\pi}{4}, r k \pi + \frac{5\pi}{4} \right]$	 	9
$\text{مثال } y = a r \cos(n^r + r n + 1) \rightarrow -1 \leq n^r + r n + 1 \leq 1$ $-1 \leq n^r + r n + 1 \rightarrow n^r + r n + r \geq 0 \rightarrow (n+1)(n+r) \geq 0 \rightarrow \frac{r}{r+1} \leq n$ $n^r + r n + 1 \leq 1 \rightarrow n^r + r n \leq 0 \rightarrow n(n+r) \leq 0 \rightarrow \frac{-r}{r+1} \leq n$ $\rightarrow y = \sqrt{2 - r n} \rightarrow 0 \leq 2 - r n \leq 1 \rightarrow -2 \leq -r n \leq -1 \rightarrow \frac{1}{r} \leq n \leq \frac{2}{r}$ $D_f = [r, r/2]$	$D_f = [-r, -r] \cup [-1, 0]$	10
$\text{مثال } y = \log_r (1 - \log_r^n)$ $\rightarrow 1 - \log_r^n > 0 \rightarrow \log_r^n < 1 \rightarrow n < r$ $\rightarrow y = \log_r (1 - \log_r^n \frac{1}{r})$ $\rightarrow 1 - \log_r^n \frac{1}{r} > 0 \rightarrow \log_r^n \frac{1}{r} < 1 \xrightarrow{\text{الحد 100}} n > \frac{1}{r}$ $D_f = (\frac{1}{r}, +\infty)$	$D_f = (0, r)$	11
$\text{مثال } y = \sqrt{r \varepsilon n - n^r} - \Lambda \rightarrow r \varepsilon n - n^r - \Lambda > 0 \rightarrow r \varepsilon n - n^r > \Lambda \rightarrow \varepsilon n - n^r > \frac{\Lambda}{r}$ $n^r - \varepsilon n + \frac{\Lambda}{r} \leq 0 \rightarrow (n-1)(n-r) \leq 0 \rightarrow \frac{1}{r} \leq n \leq r \rightarrow D_f = [1, r]$ $\rightarrow y = \left(\frac{r n + a}{r n + 2} \right)! \rightarrow \frac{r n + a}{r n + 2} \in \mathbb{N} \rightarrow n = -\frac{2a - a}{r - r} \rightarrow D_f = \left\{ n \mid n = \frac{-2k + a}{r - r}, k \in \mathbb{N} \right\}$	$D_f = [1, r]$	12