

الف) $y = \frac{x+1}{x^2+x^2-1} = \frac{x+1}{(x-1)(x^2+\Delta x-1)}$ $\rightarrow \frac{0}{-1} = -1$ $\rightarrow \frac{1}{x} = -1$ $\rightarrow \frac{1}{x} = -1$ $\rightarrow x = -1$

$D_f = \mathbb{R} - \{-1, \frac{1}{x}, 1\}$

ب) $y = \frac{x+1}{x^2+4x^2+10x+1} = \frac{x+1}{(x+1)(x^2+4x+1)}$ $\rightarrow \frac{0}{-1} = -1$ $\rightarrow \frac{1}{x} = -1$ $\rightarrow \frac{1}{x} = -1$ $\rightarrow x = -1$

$D_f = \mathbb{R} - \{-1, \frac{1}{x}, 1\}$

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

ب) $y = \sqrt{\frac{x+1}{x^2-1x^2+x-1}} = \sqrt{\frac{x+1}{(x-1)(x^2-x+1)}}$ $\rightarrow \frac{-1}{+1} = -1$

$D_f = (-\infty, -1] \cup (1, +\infty)$

$y = \frac{1}{x^2-\Delta x+1-x+\Delta} \rightarrow x \geq 1$ $\frac{1}{x^2-\Delta x+1-x+\Delta} = \frac{1}{x^2-x+1-x+\Delta} = \frac{1}{(x-1)(x-1+\Delta)}$ $\rightarrow \frac{1}{x^2+\Delta x-\Delta-x+\Delta} = \frac{1}{x^2+x} = \frac{1}{x(x+1)}$

$D_f = \mathbb{R} - \{-1, 0, 1, \Delta\}$

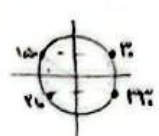
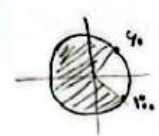
الف) $y = \sqrt{[-x]-2}$ $[-x] \geq 2 \rightarrow [x] \leq -2$ $D_f = (-\infty, -2)$

ب) $y = \frac{\Delta x^2+4}{[x]^2-1[x]-1} = \frac{\Delta x^2+4}{([x]-1)([x]+1)}$ $\rightarrow [x] \neq 1, -1$ $D_f = \mathbb{R} - ([-1, 0) \cup (1, 2))$

الف) $y = \sqrt{[x-\frac{1}{x}]+[x+\frac{1}{x}]}$ $[x-\frac{1}{x}]+[x+\frac{1}{x}] \geq 0 \rightarrow [x-\frac{1}{x}+1]+[x+\frac{1}{x}] \geq 0 \rightarrow 2[x+\frac{1}{x}]-1 \geq 0$ $[x+\frac{1}{x}] \geq \frac{1}{2} \rightarrow x+\frac{1}{x} \geq 1 \rightarrow x \geq \frac{1}{x}$ $D_f = [\frac{1}{x}, +\infty)$

ب) $y = \sqrt{[x-\frac{1}{x}]+[\frac{1}{x}-x]}$ $[x-\frac{1}{x}]+[\frac{1}{x}-x] \rightarrow [a]+[-a]=0 \quad a \in \mathbb{Z} \rightarrow x-\frac{1}{x} \in \mathbb{Z}$ $[a]+[a]-1 \quad a \notin \mathbb{Z}$

$D_f = \{x/x = k + \frac{1}{x}, k \in \mathbb{Z}\}$

$\text{الف) } y = \frac{\cot x + 1}{\sin x + 1} \quad \frac{\cos x}{\sin x} + 1$ $\tan x + 1 \neq 0 \quad \tan x \neq -1 \rightarrow \frac{1}{2}\pi, \frac{3}{2}\pi \rightarrow \frac{1}{4}\pi, \frac{5}{4}\pi$ $\cos x \neq 0, \sin x \neq 0 \rightarrow \neq \frac{1}{2}\pi, \pi, \frac{3}{2}\pi, \frac{7}{2}\pi$ $D_f = \mathbb{R} - \left\{ \frac{k\pi}{4}, k\pi + \frac{5\pi}{4}, k\pi + \frac{3\pi}{4} \right\}$ $\text{ب) } y = \sqrt{1 - \sin x} = \sqrt{(1 - \sin x)(1 + \sin x)}$ $D_f = \left\{ k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right\}$	 	6
$\text{الف) } y = \sqrt{1 - \sin x}$ $1 - \sin x \geq 0 \quad \sin x \leq 1$ $D_f = \left[k\pi + \frac{\pi}{4}, k\pi + \frac{5\pi}{4} \right]$ $\text{ب) } y = \sqrt{1 - \cos x}$ $1 - \cos x \geq 0 \quad \cos x \leq 1$ $D_f = \left[k\pi + \frac{\pi}{2}, k\pi + \frac{3\pi}{2} \right]$	 	7
$\text{الف) } y = \arcsin(x^2 + 1)$ $-1 \leq x^2 + 1 \leq 1 \rightarrow x^2 + 1 - 1 \leq 0 \rightarrow x(x+1) \leq 0$ $\text{① } \frac{-x}{+ - +} \quad [-1, 0] \quad \text{② } \frac{-x}{+ - +} \quad (-\infty, -1] \cup [1, +\infty)$ $\Rightarrow D_f = \text{①} \cap \text{②} = [-1, -1] \cup [1, 1]$ $\text{ب) } \cos y = \sqrt{1 - x}$ $1 - x \geq 0 \rightarrow x \leq 1 \rightarrow \frac{0}{1} \leq x \leq 1$ $-1 \leq \sqrt{1 - x} \leq 1 \rightarrow 1 - x \leq 1 \rightarrow x \geq 0 \rightarrow 0 \leq x \leq 1$ $\Rightarrow D_f = [0, 1]$		8
$\text{الف) } y = \log_r(1 - \log_r^x)$ $1 - \log_r^x > 0 \rightarrow 1 > \log_r^x \rightarrow r > x$ $D_f = (0, r)$ $\text{ب) } y = \log_r(1 - \log_r^{\frac{1}{r}})$ $1 - \log_r^{\frac{1}{r}} > 0 \rightarrow 1 > \log_r^{\frac{1}{r}} \rightarrow \frac{1}{r} > x$ $D_f = (0, \frac{1}{r})$ چون مضامین 0 است جیت نامادنه عوض مرشد! $\log_r^{\frac{1}{r}} < 1 \rightarrow x > \frac{1}{r} \rightarrow D_f = (\frac{1}{r}, +\infty)$		9
$\text{الف) } y = \sqrt{r^{kx-x^2} - 1}$ $r^{kx-x^2} \geq 1 \rightarrow r^x \geq 1$ $D_f = [1, r]$ $\text{ب) } y = \left(\frac{r^x + a}{r^x + r} \right)!$ $\frac{r^x + a}{r^x + r} \in \mathbb{N}$ $D_f = \left\{ x / x = \frac{-rw + a}{rw - r}, k \in \mathbb{N} \right\}$	$r^{kx-x^2} \geq 1 \rightarrow r^x \geq 1$ $r^{kx-x^2} = 1 \rightarrow -kx + x^2 = 0 \rightarrow (x - r)(x - 1) = 0$ $\frac{1}{r} \leq x \leq r$ $\frac{r^x + a}{r^x + r} \in \mathbb{N}$ $\frac{-rw + a}{rw - r} = \frac{-rw + a}{rw - r}$	10

$$9 - \text{ب}) \quad y = \log_2 (1 - \log_2^n \frac{1}{r}) \rightarrow \log_2^n \frac{1}{r} \rightarrow n > .$$

$$\hookrightarrow 1 - \log_2^n \frac{1}{r} > 0 \rightarrow \log_2^n \frac{1}{r} < 1 \xrightarrow{\text{مناسب (0,1)}} n > \frac{1}{r}$$

$$Df_2 \left(\frac{1}{r}, +\infty \right)$$