

الف) $y = \log_{u-3}^{d-u} \rightarrow d-u > 0 \rightarrow u < d$
 $\rightarrow u-3 > 0 \rightarrow u > 3, u-3 \neq 1 \rightarrow u \neq 4 \Rightarrow D_f = (3, d) - \{4\}$

ب) $y = \log_{u+3}^{u^2-1} \rightarrow u^2-1 > 0 \rightarrow u^2 > 1 \rightarrow \begin{cases} u > 1 \\ u < -1 \end{cases}$
 $\rightarrow u+3 > 0 \rightarrow u > -3, u+3 \neq 1 \rightarrow u \neq -2 \Rightarrow D_f =$
 $\textcircled{2} \checkmark D_f = (-3, -2) \cup (-2, -1) \cup (1, +\infty)$

الف) $y = \log_{u-3}^{u^2-4u+3} \rightarrow \frac{(u-3)(u-1)}{u-3} > 0 \rightarrow \frac{1}{-d} + \frac{1}{+} + \frac{1}{+}$
 $D_f = (1, 3) \cup (3, +\infty) \quad \textcircled{2} \checkmark D_f = (1, +\infty) - \{3\}$

ب) $y = \log_{u+d}^{\frac{u+3}{u-2}} \rightarrow \frac{-3}{+} - \frac{2}{+} + \frac{1}{+}$
 $\rightarrow u+d > 0 \rightarrow u > -d$
 $\rightarrow u+d \neq 1 \rightarrow u \neq -d \Rightarrow D_f = (-d, -d) \cup (-d, -3) \cup (2, +\infty)$

الف) $y = \sqrt{3 - \log_2^{(u-2)}}$
 $\rightarrow u-2 > 0 \rightarrow u > 2$
 $\rightarrow 3 - \log_2^{(u-2)} \geq 0 \rightarrow \log_2^{(u-2)} \leq 3 \rightarrow u-2 \leq 8 \rightarrow u \leq 10$
 $D_f = (\sqrt{3}, +\infty)$

ب) $y = \log(\sqrt{2} \log_3^x - 1) \rightarrow \sqrt{2} \log_3^x - 1 > 0 \rightarrow \sqrt{2} \log_3^x > 1 \rightarrow \log_3^x > \frac{1}{\sqrt{2}} \rightarrow x > \sqrt{3}$
 $D_f = (\sqrt{3}, +\infty)$

الف) $y = \frac{3}{3^x + 1} \rightarrow 3^x \neq -1 \rightarrow \text{همواره برقرار} \quad D_f = \mathbb{R}$

ب) $y = \frac{3}{3^x - 1} \rightarrow 3^x \neq 1 \rightarrow 3^x \neq 1 \rightarrow x \neq 0 \rightarrow D_f = \mathbb{R} - \{0\}$

ج) $y = \frac{3}{3^x - 2} \rightarrow 3^x \neq 2 \rightarrow 3^x \neq 1 \rightarrow x \neq \frac{1}{3} \rightarrow D_f = \mathbb{R} - \{\frac{1}{3}\}$

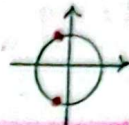
د) $y = \frac{3}{3^x - 3} \rightarrow 3^x \neq 3 \rightarrow x \neq \log_3^3 \rightarrow D_f = \mathbb{R} - \{\log_3^3\}$

الف) $y = (kx+1)! \rightarrow kx+1 \in \mathbb{W} \rightarrow kx \in \mathbb{W}-1 \rightarrow x \in \frac{\mathbb{W}-1}{k}$
 $D_f = \{x | x = \frac{k-1}{k}, k \in \mathbb{W}\}$

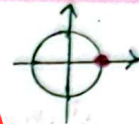
ب) $y = \left(\frac{3x-2}{2x-5}\right)!$
 $\frac{3x-2}{2x-5} \in \mathbb{W} \rightarrow 3x-2 \in 2x \mathbb{W} - 5 \mathbb{W}$
 $\rightarrow 3x - 2x \mathbb{W} \in 2 - 5 \mathbb{W}$

$3(x-2 \mathbb{W}) \in 2-5 \mathbb{W} \rightarrow x \in \frac{2-5 \mathbb{W}}{3-2 \mathbb{W}}$
 $\checkmark D_f = \{x | x = \frac{2-5k}{3-2k}, k \in \mathbb{W}\}$

الف) $y = \frac{\sin x - 2}{2 \cos x + 1} \rightarrow 2 \cos x + 1 \neq 0 \rightarrow 2 \cos x \neq -1 \rightarrow \cos x \neq -\frac{1}{2}$
 $D_f = \mathbb{R} - \left\{ 2k\pi + \frac{2\pi}{3} \text{ و } 2k\pi + \frac{4\pi}{3} \right\}$



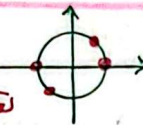
ب) $y = \frac{\sin x + 3}{\cos x - 1} \rightarrow \cos x \neq 1 \rightarrow D_f = \mathbb{R} - \{ 2k\pi \}$



الف) $y = \frac{2 \sin x + 1}{\tan x + 1} \rightarrow \tan x \neq -1$ و تعریف نشده
 $D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{4} \text{ و } k\pi - \frac{\pi}{4} \right\}$



ب) $y = \frac{\cos x + 1}{\cot x - 1} \rightarrow \cot x \neq +1$ و تعریف نشده
 $D_f = \mathbb{R} - \left\{ k\pi \text{ و } k\pi + \frac{\pi}{4} \right\}$



الف) $\sin y = x^2 - 2 \rightarrow -1 \leq x^2 - 2 \leq 1 \rightarrow 1 \leq x^2 \leq 3 \rightarrow 1 \leq x \leq \sqrt{3}$
 $D_f = [-\sqrt{3}, -1] \cup [1, \sqrt{3}]$

ب) $\arccos(\sqrt{x} - 3)$ $-1 \leq \sqrt{x} - 3 \leq 1 \rightarrow 2 \leq \sqrt{x} \leq 4 \rightarrow 4 \leq x \leq 16$
 $D_f = [4, 16]$

الف) $\cos y = |x| - 3 \rightarrow -1 \leq |x| - 3 \leq 1 \rightarrow 2 \leq |x| \leq 4$
 $D_f = [2, 4] \cup [-4, -2]$

ب) $y = \arcsin(x^2 + 3x + 1) \rightarrow -1 \leq x^2 + 3x + 1 \leq 1$
 $D_f = [-3, -2] \cup [-1, 0]$

الف) $y = \log_p x^{2-4} \rightarrow x^{2-4} > 0 \rightarrow x^2 > 4 \rightarrow x > 2 \text{ و } x < -2$
 $D_f = (-\infty, -2) \cup (2, +\infty)$

ب) $y = \log_p \frac{2-|x|}{2} \rightarrow 2-|x| > 0 \rightarrow |x| < 2 \rightarrow x < 2 \text{ و } x > -2$
 $D_f = (-2, 2)$