

$$\text{الف) } \omega - x > 0 \Rightarrow \omega > x$$

$$x - w > 0 \Rightarrow x > w, x - w \neq 1 \Rightarrow x \neq w$$

$$D_f = (w, \omega) - \{w\}$$

$$\text{ب) } x^y - 1 > 0 \Rightarrow x^y > 1 \Rightarrow x > 1, x < -1$$

$$x + w > 0 \Rightarrow x > -w, x + w \neq 1 \Rightarrow x \neq -w$$

$$D_f = (-w, -1) \cup (1, +\infty) - \{-w\}$$

$$\text{الف) } \frac{(x-1)(x-w)}{x-w} > 0 \quad \frac{1}{-\phi + \frac{w}{0} +} \Rightarrow D_f = (1, +\infty) - \{w\}$$

$$\text{ب) } \frac{x+w}{x-w} > 0 \quad \frac{-w}{+\phi - \frac{w}{0} +}$$

$$x + \omega > 0 \Rightarrow x > -\omega, x + \omega \neq 1 \Rightarrow x \neq -w$$

$$D_f = (-\omega, -w) \cup (w, +\infty)$$

$$\text{الف) } x - y > 0 \Rightarrow x > y$$

$$y - \log_v^{(x-y)} > 0 \Rightarrow y > \log_v^{(x-y)} \Rightarrow y^y > x - y \Rightarrow x \leq 1$$

$$D_f = (y, 10]$$

$$\text{ب) } x > 0$$

$$y \log_x^x - 1 > 0 \Rightarrow y \log_x^x > 1 \Rightarrow \log_x^x > \frac{1}{y} \Rightarrow x > x^{\frac{1}{y}} = \sqrt[y]{x}$$

$$D_f = (\sqrt[y]{x}, +\infty)$$

$$\text{الف) } x^x + 1 \neq 0 \Rightarrow x^x \neq -1 \Rightarrow D_f = \mathbb{R}$$

$$\text{ب) } x^x - 1 \neq 0 \Rightarrow x^x \neq 1 \Rightarrow x \neq 0 \Rightarrow D_f = \mathbb{R} - \{0\}$$

$$\text{ج) } x^x - y \neq 0 \Rightarrow x^x \neq y \Rightarrow y^{yx} \neq y^1 \Rightarrow yx \neq 1 \Rightarrow x \neq \frac{1}{y} \Rightarrow D_f = \mathbb{R} - \{\frac{1}{y}\}$$

$$\text{د) } x^x - w \neq 0 \Rightarrow x^x \neq w \Rightarrow x \neq \log_x^w \Rightarrow D_f = \mathbb{R} - \{\log_x^w\}$$

$$\text{الف) } x + 1 \in W \Rightarrow x \in W - 1 \Rightarrow x \in \frac{W-1}{x} \Rightarrow D_f = \{x \mid x \in \frac{k-1}{x}, k \in W\}$$

$$\text{ب) } \frac{y^x - y}{y^x - \omega} \in W \Rightarrow y^x - y \in y^x W - \omega W \Rightarrow y^x - y W x \in y - \omega W$$

$$\Rightarrow x \in \frac{y - \omega W}{y - y W} \Rightarrow D_f = \{x \mid x \in \frac{y - \omega k}{y - y k}, k \in W\}$$

الف) $\sqrt{2} \cos x + 1 \neq 0 \Rightarrow \sqrt{2} \cos x \neq -1 \Rightarrow \cos x \neq -\frac{1}{\sqrt{2}}$

$D_f = \mathbb{R} - \left\{ 2k\pi + \frac{\pi}{3}, 2k\pi + \frac{5\pi}{3} \right\}$

ب) $\cos x - 1 \neq 0 \Rightarrow \cos x \neq 1$

$D_f = \mathbb{R} - \{2k\pi\}$

الف) $\tan x + 1 \neq 0 \Rightarrow \tan x \neq -1$

$\tan x \text{ تعریف شده باشد} \Rightarrow x \neq 2k\pi + \frac{\pi}{2}, 2k\pi + \frac{3\pi}{2} \Rightarrow D_f = \mathbb{R} - \left\{ k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right\}$

ب) $\cot x - 1 \neq 0 \Rightarrow \cot x \neq 1$

$\cot x \text{ تعریف شده باشد} \Rightarrow x \neq k\pi$

$D_f = \mathbb{R} - \left\{ k\pi, k\pi + \frac{\pi}{4} \right\}$

الف) $-1 \leq x^2 - 2 \leq 1 \Rightarrow 1 \leq x^2 \leq 3 \Rightarrow 1 \leq x \leq \sqrt{3}$

$D_f = [1, \sqrt{3}] \cup [-\sqrt{3}, -1]$

$-1 \geq x \geq -\sqrt{3}$

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

$\sqrt{x} \Rightarrow x \geq 0$

الف) $-3 \leq |x| - 2 \leq 1 \Rightarrow 2 \leq |x| \leq 4 \Rightarrow 2 \leq x \leq 4$

$D_f = [-4, -2] \cup [2, 4]$

$-2 \geq x \geq -4$

ب) $-1 \leq x^2 + 3x + 1 \leq 1 \Rightarrow 0 \leq x^2 + 3x + 2 \Rightarrow 0 \leq (x+1)(x+2) \Rightarrow \frac{-2}{+} \leq x \leq \frac{-1}{+}$

$D_f = [-3, -2] \cup [-1, 0]$ $x^2 + 3x \leq 0 \Rightarrow x(x+3) \leq 0 \Rightarrow \frac{-3}{+} \leq x \leq \frac{0}{+}$

الف) $x^2 - 4 > 0 \Rightarrow x^2 > 4 \Rightarrow x > 2$ $D_f = (-\infty, -2) \cup (2, +\infty)$

$x < -2$

ب) $2 - |x| > 0 \Rightarrow 2 > |x| \Rightarrow 2 > x$ $D_f = (-2, 2)$

$-2 < x$