

الف) $\frac{x^2 - 4x}{x^3 - x} > 0 \rightarrow \frac{x^2 - 4x}{x(x^2 - 1)} > 0$ $\frac{x^3 - x}{x(x^2 - 1)} > 0$ $\frac{-1}{0} \frac{0}{0} \frac{1}{0} \frac{0}{0}$ $D_f = (-1, 1) \cup (4, +\infty)$

ب) $\frac{x^5 - x^3}{x^3 - x} > 0 \rightarrow \frac{x^5 - x^3}{x^3(x^2 - 1)} > 0$ $\frac{x^3 - x}{x(x^2 - 1)} > 0$ $\frac{-1}{0} \frac{0}{0} \frac{1}{0} \frac{0}{0}$ $D_f = \mathbb{R} - \{-1, 0, 1\}$

الف) $x + |x| > 0$ $|x| > -x$ $D_f = \mathbb{R}^+$

ب) $x|x| > 0$ $D_f = \mathbb{R}^+$

الف) $2 - [x] > 0$ $[x] < 2$ $D_f = (-\infty, 3)$

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الف) $[x - \frac{1}{3}] + [x + \frac{2}{3}] > 0$ $[x + \frac{2}{3} - 1] + [x + \frac{2}{3}] > 0$ $2[x + \frac{2}{3}] > 1 \rightarrow [x + \frac{2}{3}] > \frac{1}{2}$ $x > \frac{1}{2} - \frac{2}{3} \rightarrow D_f = [\frac{1}{6}, +\infty)$

ب) $[x - \frac{1}{3}] + [-x + \frac{1}{3}] > 0$ $[x - \frac{1}{3}] + [-(x - \frac{1}{3})] > 0$ $x - \frac{1}{3} \in \mathbb{Z} \rightarrow D_f = \{x | x = k + \frac{1}{3}, k \in \mathbb{Z}\}$

الف) $\sin x - 1 \neq 0$ $\sin x \neq 1$ $D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{2}\}$

ب) $2 \sin^2 x - 1 \neq 0$ $2 \sin^2 x \neq 1$ $\sin^2 x \neq \frac{1}{2}$ $\sin x \neq \pm \frac{\sqrt{2}}{2}$

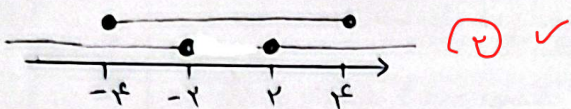
$D_f = \mathbb{R} - \{k\pi + \frac{\pi}{4}, k\pi + \frac{3\pi}{4}\}$

الف) $2 \sin x - 1 > 0$ $2 \sin x > 1$ $\sin x > \frac{1}{2}$ $D_f = [2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}]$

ب) $\cos x - 1 > 0$ $\cos x > 1$ $D_f = \{2k\pi\}$

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

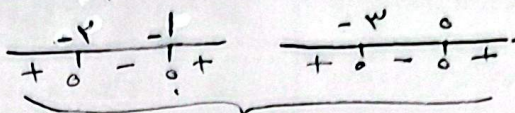
$|x| \geq 2$ $|x| \leq 4$
 $x \geq 2$ $-4 \leq x \leq 4$
 $x \leq -2$



✓

ب) $-1 \leq x^2 + 3x + 1 \leq 1$

$x^2 + 3x + 2 \geq 0$ $x^2 + 3x \leq 0$
 $(x+1)(x+2) \geq 0$ $x(x+3) \leq 0$
 -1 -2 0 -3 0



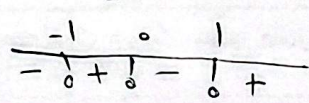
$D_f = [-3, -2] \cup [-1, 0]$

الف) $x - 2 > 0$ $x > 2$
 $2 - \log_2(x-2) > 0$
 $\log_2(x-2) \leq 2$
 $x - 2 \leq 4$
 $x \leq 6$

$D_f = (2, 6]$

✓

ب) $x^3 - x > 0$ $D_f = (-1, 0) \cup (1, +\infty)$
 $x(x^2 - 1) > 0$
 0 -1 1



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

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

ج) $x^x - 2 \neq 0$ $D_f = \mathbb{R} - \{\log_2 x\}$
 $x^x \neq 2$
 $x \neq \log_2 x$

د) $x^x - 3 \neq 0$ $D_f = \mathbb{R} - \{\log_3 x\}$
 $x^x \neq 3$
 $x \neq \log_3 x$

الف) $x^x + 1 \in \mathbb{W}$ $D_f = \{x | x \leq \frac{u-1}{x}, u \in \mathbb{W}\}$
 $x^x \in \mathbb{W} - 1$
 $x \in \frac{\mathbb{W} - 1}{x}$

ب) $\frac{x^x - 2}{x^x - 1} \in \mathbb{W}$ $D_f = \{x | x = \frac{u-2}{x^x - 1}, u \in \mathbb{W}\}$
 $\frac{-u+2}{x^x - 1} = \frac{u-2}{x^x - 1}$