

الف) $y = \sqrt{\frac{x^2-7x}{x^2-x}} = \sqrt{\frac{x(x-7)}{x(x-1)(x-1)}}$ $\frac{-1}{-1} \frac{*}{+} \frac{1}{+} \frac{1}{+}$ $D_f = \mathbb{R} \setminus \{0, 1, 7\}$ (۱۷, ۲۵)

ب) $y = \sqrt{\frac{x^5-x^7}{x^2-x}} = \sqrt{\frac{x^3(x-1)(x+1)}{x(x-1)(x+1)}}$ $D_f = \mathbb{R} \setminus \{0, \pm 1\}$

(۲) ✓

الف) $y = \frac{|x|}{\sqrt{|x|+|x|}}$ $|x| > 0 \Rightarrow x > 0$ $D_f = (0, +\infty)$

ب) $y = \frac{1}{\sqrt{|x|+|x|}}$ $|x| > 0 \Rightarrow x > 0$ $D_f = (0, +\infty)$

(۲) ✓

الف) $y = \sqrt{2-[x]}$ $[x] \leq 1 \Rightarrow x < 2$ $D_f = (-\infty, 2)$

ب) $y = \frac{1}{\sqrt{2-[x]}}$ $[x] < 2 \Rightarrow x < 2$ $D_f = (-\infty, 2)$

(۲) ✓

$y = \sqrt{[x-\frac{1}{2}] + [x+\frac{1}{2}]}$ $[x-\frac{1}{2}] \geq 0, [x+\frac{1}{2}] \geq 0 \Rightarrow x \geq \frac{1}{2}$

$D_f = [\frac{1}{2}, +\infty)$ $[x-\frac{1}{2}] \leq -1, [x+\frac{1}{2}] \geq 1 \Rightarrow [x+\frac{1}{2}] - [x-\frac{1}{2}] \geq 2$ ✗

$y = \sqrt{[x-\frac{1}{2}] + [-x+\frac{1}{2}]}$ $\frac{x-\frac{1}{2}}{x-\frac{1}{2}} \rightarrow [x] \geq [x-\frac{1}{2}]$ ✗ $[x] \leq [x-\frac{1}{2}]$ ✗ $[x] \leq [x-\frac{1}{2}] \Rightarrow x \in \mathbb{Z}$ ✗ $[x] \geq [x-\frac{1}{2}] \Rightarrow x \in \mathbb{Z} + \frac{1}{2}$ ✗

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



ب) $\sin x \neq \pm \frac{1}{2} \Rightarrow x \neq 2k\pi \pm \frac{\pi}{6}, 2k\pi \pm \frac{5\pi}{6} \Rightarrow D_f = \mathbb{R} \setminus \{2k\pi \pm \frac{\pi}{6}, 2k\pi \pm \frac{5\pi}{6}\}$

{2k\pi \pm \frac{\pi}{6}}



۱/۵

$$a) |\sin x| > \frac{1}{2} \Leftrightarrow x \in [k\pi + \frac{\pi}{6}, k\pi + \frac{5\pi}{6}] \cup [k\pi + \frac{7\pi}{6}, k\pi + \frac{11\pi}{6}] \Rightarrow D_f = [k\pi + \frac{\pi}{6}, k\pi + \frac{5\pi}{6}] \cup [k\pi + \frac{7\pi}{6}, k\pi + \frac{11\pi}{6}]$$



✓

$$b) |\cos x| = 1 \Leftrightarrow \cos x = \pm 1 \Leftrightarrow x = k\pi \Rightarrow D_f = \{k\pi\}$$

$$a) |x-2| > -1 \Rightarrow |x| > 1 \Rightarrow x > 1 \vee x < -1 \Rightarrow D_f = (-\infty, -1) \cup (1, \infty)$$

$$b) x^2 + |x+1| > -1 \Leftrightarrow (x+1)(x+2) > 0 \Rightarrow x > -1 \vee x < -2 \Rightarrow D_f = (-\infty, -2) \cup (-1, \infty)$$

$$a) x-2 > 0 \Rightarrow x > 2, \log_2 x < 1 \Rightarrow x-1 < 1 \Rightarrow x < 2 \Rightarrow D_f = (2, \infty)$$

$$b) x^2 - x > 0 \Rightarrow x(x-1) > 0 \Rightarrow x < 0 \vee x > 1 \Rightarrow D_f = (-\infty, 0) \cup (1, \infty)$$

✓

$$a) D_f \in \mathbb{R} \quad b) x^2 - 1 \neq 0 \Rightarrow x \neq \pm 1 \Rightarrow D_f = \mathbb{R} - \{\pm 1\}$$

$$c) x^2 - 1 \neq 0 \Rightarrow x \neq \pm 1 \Rightarrow D_f = \mathbb{R} - \{\pm 1\}$$

$$d) x^2 \neq 1 \Rightarrow x \neq \pm 1 \Rightarrow D_f = \mathbb{R} - \{\pm 1\}$$

✓

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

$$b) \frac{x-1}{x+1} \in W \Rightarrow \frac{x-1}{x+1} = k (k \in W) \Rightarrow x-1 = k(x+1) \Rightarrow (1-k)x = 1+k \Rightarrow x = \frac{1+k}{1-k}$$

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

✓