

1.

$$\begin{aligned} \text{الف)} \quad x^2 - 4x > 0 &\rightarrow x(x-4) > 0 \\ x^3 - x > 0 &\rightarrow x(x^2-1) > 0 \end{aligned}$$

$$\begin{array}{c} -1 \quad 0 \quad 1 \quad 4 \\ - \quad + \quad + \quad - \quad + \end{array}$$

$$D_f = (-1, 1) \cup (4, +\infty) - \{0\}$$

1, 5, 6

$$\begin{aligned} \text{ب)} \quad x^2 - x^3 > 0 &\rightarrow x^2(x^2-1) > 0 \\ x^3 - x > 0 &\rightarrow x(x^2-1) > 0 \end{aligned}$$

$$\begin{array}{c} * \quad * \quad * \\ -1 \quad 0 \quad 1 \\ + \quad + \quad + \quad + \end{array}$$

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

2.

$$\text{الف)} \quad x + |x| > 0 \rightarrow \begin{array}{l} \oplus \checkmark \\ \ominus \times \\ \odot \times \end{array}$$

$$D_f = \mathbb{R}^+$$

2 ✓

$$\text{ب)} \quad x|x| > 0 \rightarrow \begin{array}{l} \oplus \checkmark \\ \ominus \times \\ \odot \times \end{array}$$

$$D_f = \mathbb{R}^+$$

3.

$$\text{الف)} \quad 2 - [x] > 0 \rightarrow [x] < 2$$

$$D_f = (-\infty, 2)$$

$$\text{ب)} \quad 2 - [x] > 0 \rightarrow [x] < 2$$

$$D_f = (-\infty, 2)$$

2 ✓

4.

$$\text{الف)} \quad \left[x - \frac{1}{x}\right] + \left[x + \frac{1}{x}\right] > 0 \rightarrow \left[x - \frac{1}{x} + 1\right] + \left[x + \frac{1}{x}\right] > 1 \rightarrow 2\left[x + \frac{1}{x}\right] > 1$$

$$\left[x + \frac{1}{x}\right] > \frac{1}{2} \rightarrow x + \frac{1}{x} > 1 \rightarrow x > \frac{1}{x} \quad D_f = \left[\frac{1}{x}, +\infty\right)$$

✓

$$\text{ب)} \quad \begin{array}{c} \bullet \bullet \bullet \bullet \bullet \\ \bullet \bullet \bullet \bullet \bullet \end{array} \rightarrow x - \frac{1}{x} \in \mathbb{Z}$$

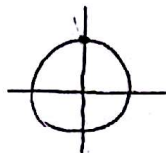
$$x \in \mathbb{Z} + \frac{1}{x} \rightarrow D_f = \left\{x \mid x = K + \frac{1}{x}, K \in \mathbb{Z}\right\}$$

درانای اعداد صحیح منفرد و اعداد اعشاری -

2 ✓

5.

$$\text{الف)} \quad \sin x - 1 \neq 0 \rightarrow \sin x \neq 1$$



✓

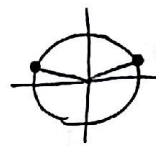
$$D_f = \mathbb{R} - \left\{2k\pi + \frac{\pi}{2}\right\}$$

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



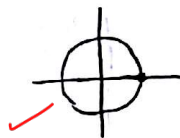
$D_f = \mathbb{R} - \left\{ \frac{k\pi}{r} + \frac{\pi}{r} \right\}$

الف) $r \sin x - 1 > 0 \rightarrow r \sin x > 1 \rightarrow \sin x > \frac{1}{r}$



$D_f = \left[r k \pi + \frac{\pi}{r}, r k \pi + \frac{\pi}{r} \right]$

$\rightarrow) \cos x - 1 > 0 \rightarrow \cos x > 1$



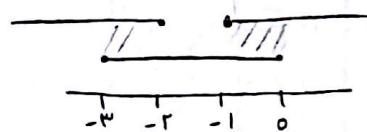
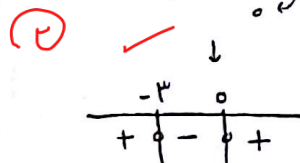
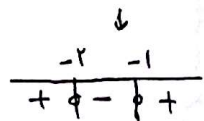
$D_f = \{ r k \pi \}$

الف) $\cos y = |x| - 3 \rightarrow -1 \leq |x| - 3 \leq 1 \rightarrow -2 \leq |x| \leq 4 \rightarrow -2 \leq x \leq 4$

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

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

$\rightarrow (x+1)(x+2) \geq 0 \quad | \quad x^2 + 3x \leq 0 \rightarrow x(x+3) \leq 0$

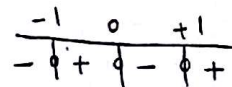


$D_f = [-3, -2] \cup [-1, 0]$

الف) $r - \log_p(x-2) > 0 \rightarrow \log_p(x-2) < r \rightarrow x-2 < 9 \rightarrow x < 11$

$D_f = (-\infty, 11]$

$\rightarrow) \log(x^2 - x) \rightarrow x^2 - x > 0 \rightarrow x(x-1) > 0$



$D_f = (-1, 0) \cup (1, +\infty)$

الف) $r^x + 1 \neq 0 \rightarrow r^x \neq -1$

$\rightarrow D_f = \mathbb{R}$

$\rightarrow) r^x - 1 \neq 0 \rightarrow r^x \neq 1$

$x \neq 0 \rightarrow D_f = \mathbb{R} - \{0\}$

ج) $r^x - 2 \neq 0 \rightarrow r^x \neq 2$

$D_f = \mathbb{R} - \{\log_r 2\}$

د) $r^x - 3 \neq 0 \rightarrow r^x \neq 3$

$D_f = \mathbb{R} - \{\log_r 3\}$

$$\text{الف) } Kx+1 \in W \rightarrow Kx \in W-1 \rightarrow x \in \frac{W-1}{K} \quad D_f = \{x \mid x \in \frac{K-1}{K}, K \in W\}$$

(P) ✓

$$\text{ب) } \frac{Kx-2}{2x-5} \in W \rightarrow x = -\frac{-5W+2}{2W-3} \rightarrow x = \frac{5W-2}{2W-3} \quad D_f = \{x \mid x = \frac{5K-2}{2K-3}, K \in W\}$$