

نام و نام خانوادگی کیمیا نصر اصفهانی پاسخنامه تشریحی تکلیف شماره ۴ کلاس دهم رشته C

الف -
$$\begin{cases} 2-x \geq 0 \rightarrow x \leq 2 \\ 2-\sqrt{2-x} \geq 0 \rightarrow 2-x \leq 4 \rightarrow x \geq -14 \end{cases} \Rightarrow D_f = [-14, 2]$$

ب -
$$\begin{cases} x-2 \geq 0 \rightarrow x \geq 2 \\ 3-\sqrt{x-2} \geq 0 \rightarrow x \leq 11 \end{cases} \Rightarrow D_f = [2, 11]$$

الف - $4-2x^2 \geq 0 \Rightarrow 2(1-x^2) \geq 0 \rightarrow 1-x^2 \geq 0 \rightarrow x = \pm\sqrt{2}$

x	$-\sqrt{2}$	0	$+\sqrt{2}$
	-	+	-

$\Rightarrow D_f = [-\sqrt{2}, +\sqrt{2}]$

ب - $3|x|-4 = 0 \rightarrow 3|x|=4 \rightarrow |x| = \frac{4}{3} \rightarrow x = \pm\frac{4}{3}$

x	$-\frac{4}{3}$	0	$+\frac{4}{3}$
	+	-	+

$\Rightarrow D_f = (-\infty, -\frac{4}{3}] \cup [\frac{4}{3}, +\infty)$

الف - * توان رادیکال غیر است یعنی دامنه اعداد غیر رادیکالی $\mathbb{R}$ و فقط خروج باید حتماً باشد.

$|x|-3 \neq 0 \rightarrow |x| \neq 3 \rightarrow x \neq \pm 3 \Rightarrow D_f = \mathbb{R} - \{-3, +3\}$

ب - * دوباره توان رادیکال غیر است و فقط خروج و رادیکال صورت برمی ماند.

$$\begin{cases} x \geq 0 \\ \sqrt{x}-3 \neq 0 \Rightarrow \sqrt{x} \neq 3 \Rightarrow x \neq 9 \end{cases} \Rightarrow D_f = [0, +\infty) - \{9\}$$

الف - $\begin{cases} \textcircled{1} 3 - |x| = 0 \rightarrow |x| = 3 \rightarrow x = \pm 3 \\ \textcircled{2} \frac{|x| + 2}{+} \neq 0 \rightsquigarrow \text{دائمًا موجب} \end{cases}$

x	-3	$+3$
	$-$	$+$
	0	0
	$-$	$+$

$\Rightarrow D_f = [-3, +3]$

ب - $\begin{cases} \textcircled{1} 1 - x^2 = 0 \rightarrow x = \pm 1 \\ \textcircled{2} |x| - 1 \neq 0 \rightarrow x \neq \pm 1 \end{cases}$

x	-1	$+1$
	$-$	$+$
	0	0
	$-$	$+$

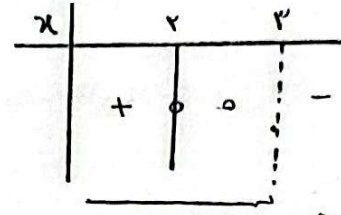
$\Rightarrow D_f = [-1, +1]$

$\Rightarrow D_f = [-3, +3] - \{-1, +1\}$

الف) $x + |x| > 0 \rightsquigarrow |x| > -x \begin{cases} + & \checkmark \\ - & \times \\ 0 & \times \end{cases} \rightarrow D_f = \mathbb{R}^+ \subseteq (0, +\infty)$

ب) $x|x| > 0 \begin{cases} + & \checkmark \\ 0 & \times \\ - & \times \end{cases} \rightarrow D_f = \mathbb{R}^+ \subseteq (0, +\infty)$

الف) $2 - [x] \geq 0 \rightsquigarrow 2 - [x] = 0 \rightarrow [x] = 2 \rightarrow 2 \leq x < 3$



$D_f = (-\infty, 3)$

ب) $2 - [x] \geq 0 \rightsquigarrow 2 \geq [x] \rightarrow x < 3$

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

الف) $x[x] \neq 0 \rightsquigarrow 0 \leq x < 1 \rightsquigarrow D_f = \mathbb{R} - [0, 1)$

برای اعداد صحیح
که مقدار یعنی باید از 0 است و 1 نیست

ب) $-x[x] > 0 \rightsquigarrow 0 \leq x < 1 \rightsquigarrow D_f = \emptyset$
 برای اعداد صحیح $\rightarrow$ از طرفی برای اعداد صحیح داریم:
 $\frac{-x[x]}{+} \rightarrow -$ $\frac{-x[x]}{+} \rightarrow -$
 دوباره برآورد این
 اعداد صحیح و باید 0 است و 1 نیست

الف) $[x - \frac{1}{3}] + [x + \frac{2}{3}] \geq 0 \rightsquigarrow [x + \frac{2}{3} - 1] + [x + \frac{2}{3}] \geq 0 \rightsquigarrow [x + \frac{2}{3}] - 1 + [x + \frac{2}{3}] \geq 0$

$\rightsquigarrow [x + \frac{2}{3}] + [x + \frac{2}{3}] \geq 1 \rightsquigarrow 2[x + \frac{2}{3}] \geq 1 \rightsquigarrow [x + \frac{2}{3}] \geq \frac{1}{2} \rightsquigarrow x + \frac{2}{3} \geq 1 \rightsquigarrow x \geq \frac{1}{3}$

$\rightsquigarrow D_f = [\frac{1}{3}, +\infty)$

ب) $[x - \frac{1}{3}] + [-x + \frac{1}{3}] \geq 0 \rightsquigarrow [x - \frac{1}{3}] + (-[x - \frac{1}{3}]) \geq 0 \rightsquigarrow \begin{cases} x \in \mathbb{Z} & [x] + [-x] = 0 \\ x \notin \mathbb{Z} & [x] + [-x] = -1 \end{cases} \rightarrow x - \frac{1}{3} \in \mathbb{Z}$
 $\rightarrow D_f = \{x \mid x = n + \frac{1}{3}, n \in \mathbb{Z}\}$

الف) $\sqrt{2} \sin^2 x = 1 \rightsquigarrow \sqrt{2} \sin^2 x = 1 \rightsquigarrow \sin^2 x = \frac{1}{\sqrt{2}} \rightsquigarrow \sin x = \pm \frac{1}{\sqrt[4]{2}}$

$$\rightarrow) \left[x - \frac{1}{r} \right] + \left[-x + \frac{1}{r} \right] \geq 0 \rightsquigarrow \left[x - \frac{1}{r} \right] + \left(- \left[x - \frac{1}{r} \right] \right) \geq 0 \rightsquigarrow \begin{cases} x \in \mathbb{Z} & [x] + [-x] = 0 \\ x \notin \mathbb{Z} & [x] + [-x] = -1 \end{cases} \Rightarrow x - \frac{1}{r} \in \mathbb{Z} \Rightarrow D_f = \left\{ x \mid x = k + \frac{1}{r}, k \in \mathbb{Z} \right\}$$

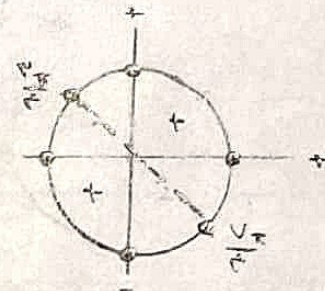
$$\text{ii) } r \sin^2 x - 1 = 0 \rightarrow r \sin^2 x = 1 \rightarrow \sin^2 x = \frac{1}{r} \Rightarrow \sin x = \pm \frac{1}{\sqrt{r}} \rightsquigarrow \pm \frac{\sqrt{r}}{r}$$

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



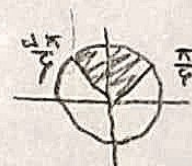
$$\rightarrow) \tan x + 1 \neq 0 \rightsquigarrow \begin{cases} \tan x = \frac{\sin}{\cos} \neq -1 \\ \sin \neq 0 \\ \cos \neq 0 \end{cases}$$

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



$$\text{iii) } \begin{cases} r \sin x - 1 \geq 0 \rightsquigarrow r \sin x \geq 1 \rightsquigarrow \sin x \geq \frac{1}{r} \quad (1) \\ -1 \leq \sin x \leq 1 \quad (2) \end{cases}$$

$$\Rightarrow D_f = \left[r k \pi + \frac{\pi}{r}, r k \pi + \frac{2\pi}{r} \right]$$



$$\rightarrow) \begin{cases} 1 - r \cos x \geq 0 \rightsquigarrow r \cos x \leq 1 \rightsquigarrow \cos x \leq \frac{1}{r} \quad (1) \\ -1 \leq \cos x \leq 1 \quad (2) \end{cases}$$

$$\Rightarrow -1 \leq \cos x \leq \frac{1}{r} \rightsquigarrow D_f = \left[r k \pi + \frac{\pi}{r}, r k \pi + \frac{2\pi}{r} \right]$$

