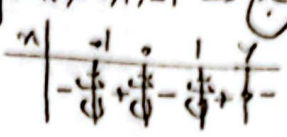
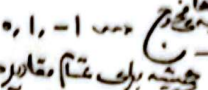


نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره ۲۲. کلاس نام و نام خانوادگی (ب)

الف) $y = \sqrt{\frac{x^2-4x}{x^3-x}} \rightarrow \frac{x^2-4x}{x^3-x} \geq 0 \rightarrow \frac{x^2-4x}{x^2-1} \geq 0 \rightarrow x^2-4x \neq 0 \rightarrow x \neq 0, 4 \rightarrow x \neq 0, 1, -1 \rightarrow$ 
 $x^2-4x = 0 \Rightarrow x(x-4) = 0 \Rightarrow x = 0, x = 4$
 $D_f = (-1, 0) \cup (0, 1) \cup [4, +\infty)$

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

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الف) $y = \frac{x+1}{\sqrt{x+|x|}} \rightarrow x+|x| > 0 \rightarrow \begin{cases} x > 0 \Rightarrow x+|x| = 2x > 0 \rightarrow x > 0 \\ |x| = -x \Rightarrow x+(-x) = 0 \neq 0 \rightarrow x < 0 \end{cases}$
 $D_f = (0, +\infty)$

ب) $y = \frac{1}{\sqrt{x|x|}} \rightarrow x|x| > 0 \rightarrow \begin{cases} \text{حالت ۱: اگر عدد مثبت جای x بگذاریم درجه مثبت شود و درجه مخرج از صفر یک شود} \\ \text{حالت ۲: اما اگر جای x عدد منفی بگذاریم همیشه جواب ما منفی خواهد بود و به شرط مانیت} \end{cases} \rightarrow$ **$D_f = (0, +\infty)$**

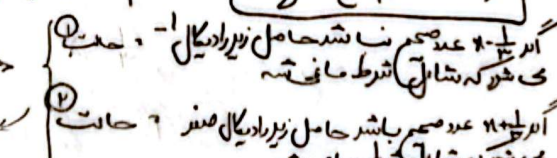
الف) $y = \sqrt{2-[n]} \rightarrow 2-[n] \geq 0 \rightarrow [n] \leq 2 \rightarrow$ **$D_f = (-\infty, 2)$**

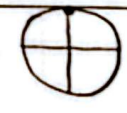
۳

ب) $y = \frac{1}{\sqrt{2-[n]}} \rightarrow 2-[n] > 0 \rightarrow [n] < 2 \rightarrow$ **$D_f = (-\infty, 2)$**

الف) $y = \sqrt{[n-\frac{1}{x}] + [n+\frac{1}{x}]} \rightarrow [n+\frac{1}{x}] = [n-\frac{1}{x}+1] = [n-\frac{1}{x}]+1$
 $\rightarrow [n-\frac{1}{x}] + ([n-\frac{1}{x}]+1) = 2[n-\frac{1}{x}] + 1 \xrightarrow{\text{شرط اول}} 2[n-\frac{1}{x}] + 1 \geq 0 \rightarrow 2[n-\frac{1}{x}] \geq -1 \rightarrow [n-\frac{1}{x}] \geq -\frac{1}{2} \rightarrow$ **$D_f = [\frac{1}{2}, +\infty)$**

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ب) $y = \sqrt{[n-\frac{1}{x}] + [-n+\frac{1}{x}]} \rightarrow$ 
 $D_f = \{k + \frac{1}{x} \mid k \in \mathbb{Z}\}$

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

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ب) $y = \frac{1}{1-\sin^2 x} \rightarrow 1-\sin^2 x \neq 0 \rightarrow \sin^2 x \neq 1 \rightarrow \sin x \neq \pm 1 \rightarrow \sin x \neq \pm \frac{\sqrt{2}}{2}$
 $D_f = \mathbb{R} - \{\frac{k\pi}{4} + \frac{\pi}{4}\}$ 

$$y = \sqrt{1 - \sin x} \rightarrow 1 - \sin x \geq 0 \rightarrow \sin x \leq 1 \rightarrow \text{الف) } D_f = \left[2k\pi + \frac{\pi}{2}, 2k\pi + \frac{3\pi}{2} \right]$$

$$y = \sqrt{\cos x} \rightarrow \cos x \geq 0 \rightarrow \cos x \geq 1 \rightarrow D_f = \{2k\pi\}$$

$$\cos y, |x| < 2 \rightarrow -1 \leq |x| < 1 \rightarrow 1 \leq |x| \leq 2 \rightarrow \text{الف) } D_f = [-2, -1] \cup [1, 2]$$

$$y = \arcsin(x^2 + 2n + 1) \rightarrow -1 \leq x^2 + 2n + 1 \leq 1 \rightarrow \begin{cases} x^2 + 2n \leq 0 \rightarrow n(n+2) \leq 0 \rightarrow n \in [-2, 0] \\ x^2 + 2n + 2 \geq 0 \rightarrow (n+1)(n+2) \geq 0 \rightarrow n \in (-\infty, -2] \cup [1, \infty) \end{cases} \rightarrow D_f = [-2, -1] \cup [-1, 0]$$

$$y = \sqrt{1 - \log_p(n+1)} \rightarrow \begin{cases} 1 - \log_p(n+1) \geq 0 \Rightarrow \log_p(n+1) \leq 1 \Rightarrow n+1 \leq p \Rightarrow n \leq p-1 \\ 1 - \log_p(n+1) \geq 0 \Rightarrow \log_p(n+1) \leq 1 \Rightarrow n+1 \leq p \Rightarrow n \leq p-1 \end{cases} \rightarrow D_f = (0, 11]$$

$$y = \log(n^2 - n) \rightarrow n^2 - n > 0 \rightarrow n(n-1) > 0 \Rightarrow n < 0 \text{ or } n > 1 \rightarrow D_f = (-1, 0) \cup (1, \infty)$$

$$y = \frac{r}{\varepsilon^{n+1}} \rightarrow \varepsilon^{n+1} \neq 0 \rightarrow \varepsilon^n \neq -1 \rightarrow D_f = \mathbb{R}$$

$$y = \frac{r}{\varepsilon^n - 1} \rightarrow \varepsilon^n - 1 \neq 0 \rightarrow \varepsilon^n \neq 1 \rightarrow D_f = \mathbb{R} - \{0\}$$

$$y = \frac{r}{\varepsilon^n - r} \rightarrow \varepsilon^n - r \neq 0 \rightarrow \varepsilon^n \neq r \rightarrow \varepsilon^n \neq (r^2)^n \rightarrow r^2 \neq r^1 \Rightarrow r \neq 1 \rightarrow n \neq \frac{1}{2} \rightarrow D_f = \mathbb{R} - \left\{ \frac{1}{2} \right\}$$

$$y = \frac{r}{\varepsilon^n - r} \rightarrow \varepsilon^n - r \neq 0 \rightarrow \varepsilon^n \neq r \rightarrow \log_\varepsilon(\varepsilon^n) \neq \log_\varepsilon(r) \Rightarrow n \neq \log_\varepsilon r \rightarrow D_f = \mathbb{R} - \{\log_\varepsilon r\}$$

$$y = (\varepsilon n + 1)! \rightarrow \begin{cases} \varepsilon n + 1 \geq 0 \Rightarrow n \geq -\frac{1}{\varepsilon} \\ \varepsilon n + 1 = k \quad (k \in \mathbb{N}, k \geq 1) \end{cases} \rightarrow D_f = \left\{ \frac{k-1}{\varepsilon} \mid k \in \mathbb{N} \right\}$$

$$y = \left(\frac{r_n - r}{r_n - \Delta} \right)! \rightarrow \begin{cases} \frac{r_n - r}{r_n - \Delta} = k \rightarrow (k \in \mathbb{N}, k \geq 0) \\ r_n - r, k(r_n - \Delta) = r_n - \Delta k \end{cases} \rightarrow D_f = \left\{ \frac{k(r_n - r)}{(r_n - \Delta)} \mid k \in \mathbb{N} \right\}$$