

۱۹/۵ آزمون خوب مندرستی

(۱) الف (الف)

$$\begin{array}{r} 2x^2 + 12x - 12x + 12 \mid x-1 \\ 2x^2 + 0x - 3 \\ \hline 0x^2 - 12x + 12 \\ 0x^2 + 0x \\ \hline -12x + 12 \\ -12x + 12 \\ \hline 0 \end{array} \Rightarrow 2x^2 + 0x - 3 = 0 \Rightarrow (2x+6)(x-1) = 0 \Rightarrow x = -\frac{6}{2} = -3$$

ریشه های مفرد

$$D_f = \mathbb{R} - \{-3, 1\}$$

ب (ب)

(۲) الف (الف)

$$\begin{array}{r} 2x^2 + 4x^2 + 10x + 3 \mid x+1 \\ 2x^2 + 2x + 3 \\ \hline 2x^2 + 10x + 3 \\ 2x^2 + 2x \\ \hline 8x + 3 \\ 8x + 8 \\ \hline -5 \end{array} \Rightarrow 2x^2 + 10x + 4 = 0 \Rightarrow (2x+4)(x+1) = 0 \Rightarrow x = -\frac{4}{2} = -2$$

ریشه های مفرد

$$D_f = \mathbb{R} - \{-2, -1\}$$

ب (ب)

(۳) الف (الف)

$$\begin{array}{r} 2x^2 - 2x^2 + 2x - 1 \mid x-1 \\ 2x^2 - 2x^2 + 2x - 1 \\ \hline 2x^2 - 2x^2 + 2x - 1 \\ 2x^2 - 2x^2 + 2x - 1 \\ \hline 0 \end{array} \Rightarrow 2x^2 - 2x^2 + 2x - 1 = 0 \Rightarrow 2x - 1 = 0 \Rightarrow x = \frac{1}{2}$$

ریشه های مفرد

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

ب (ب)

(۴) الف (الف)

$$x^2 - 5 \mid x-1 \rightarrow x^2 - 5x + 5 - 2x + 5 \neq 0 \rightarrow x^2 - 7x + 10 \neq 0 \rightarrow (x-2)(x-5) \neq 0$$

$$x < 1 \rightarrow x^2 + 0x - 5 - 2x + 5 \neq 0 \rightarrow x^2 - 2x \neq 0 \rightarrow x(x-2) \neq 0$$

ریشه های مفرد

$$D_f = \mathbb{R} - \{-2, 0, 5\}$$

ب (ب)

(۵) الف (الف)

$$[-x] - 2 \geq 0 \rightarrow [-x] \geq 2 \rightarrow -x \geq 2 \rightarrow x \leq -2$$

ب (ب)

$$[x]^2 - 2[x] - 3 \neq 0 \xrightarrow{[x]=t} t^2 - 2t - 3 = 0 \Rightarrow (t-3)(t+1) = 0 \Rightarrow t = 3 \text{ or } t = -1$$

ریشه های مفرد

$$D_f = \mathbb{R} - \{[-1, 0) \cup [3, 4)\}$$

ب (ب)

$$\left[x - \frac{1}{p} \right] + \left[x + \frac{1}{p} \right] \geq 0 \rightarrow \left[x + \frac{1}{p} \right] + \left[x + \frac{1}{p} \right] - 1 \geq 0$$

$$2 \left[x + \frac{1}{p} \right] \geq 1$$

(الف) (ب)

$$x + \frac{1}{p} \geq \frac{1}{2}$$

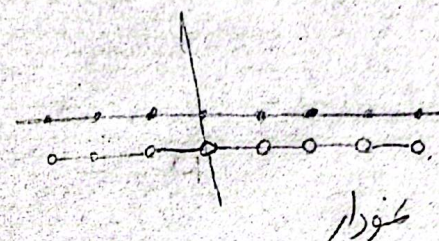
$$x \geq \frac{1}{p} - \frac{1}{2}$$

$$\left[x + \frac{1}{p} \right] \geq \frac{1}{2}$$

$$D_f = \left[\frac{1}{p} - \frac{1}{2}, +\infty \right)$$

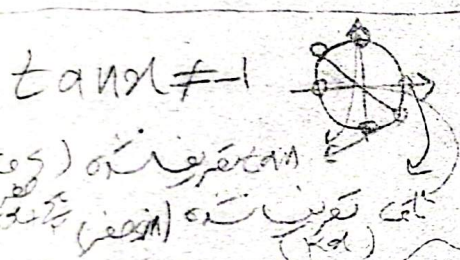
$$\left[x - \frac{1}{p} \right] + \left[\frac{1}{p} - x \right] \geq 0$$

$$x - \frac{1}{p} \in \mathbb{Z} \rightarrow x \in \mathbb{Z} + \frac{1}{p}$$



$$\left[x \right] + \left[-x \right]$$

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



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

(الف) (ب)

$$1 - \sin^2 x \geq 0$$

$$\cos^2 x \geq 0$$

$$\sin^2 x \leq 1$$

$$\sin^2 x \leq \frac{1}{p^2}$$

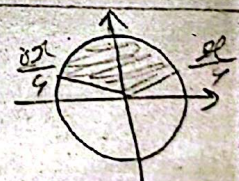
$$\frac{1}{p} \leq \sin x \leq \frac{1}{p}$$

$$D_f = \left[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right]$$



$$\sin x - 1 \geq 0 \rightarrow \sin x \geq 1 \rightarrow \sin x \geq \frac{1}{p}$$

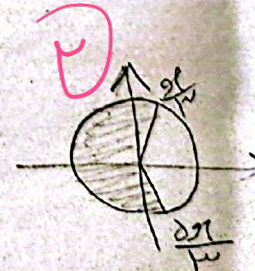
$$D_f = \left[2k\pi + \frac{\pi}{2}, 2k\pi + \frac{\pi}{2} \right]$$



(الف) (ب)

$$1 - \cos x \geq 0 \rightarrow \cos x \leq 1 \rightarrow \cos x \leq \frac{1}{p}$$

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



(الف) (ب)

$$-1 < x^2 + 3x + 1 < 1 \quad (الف)$$

$$x^2 + 3x + 1 > 0 \quad x^2 + 3x + 1 < 0$$

$$(x+1)(x+1) > 0 \quad x(x+3) < 0$$

$$\begin{array}{c|c|c|c} - & + & + & + \\ \hline + & + & + & + \end{array} \quad \begin{array}{c|c|c|c} - & + & + & + \\ \hline + & + & + & + \end{array}$$

$$\begin{array}{c} - \\ + \end{array} \quad \begin{array}{c} - \\ + \end{array}$$

$$(-\infty, -2] \cup [-1, +\infty) \cap \quad D_f = [-2, -1] \cup [-1, 0]$$



$$1 - \log_w x > 0 \rightarrow \log_w x < 1 \rightarrow x < w \quad \bigg\} \cap \quad D_f = (0, w) \quad (الف)$$

$$x > 0$$

$$1 - \log_{\frac{1}{w}} x > 0 \rightarrow \log_{\frac{1}{w}} x < 1 \rightarrow x < \frac{1}{\frac{1}{w}} \quad \bigg\} \cap$$

$$x > 0 \quad \log_{\frac{1}{w}} 1 < 1 \rightarrow w < \frac{1}{\frac{1}{w}}$$

$$D_f = (0, \frac{1}{w})$$

منباینه و است ← حیت نامانده بعضی مرتبه

$$x^{(x-1)} > 1 \rightarrow x^{(x-1)} > x^3 \quad (الف)$$

$$x^{(x-1)} > x^3 \rightarrow -x^2 + (x-3) > 0$$

$$D_f = [1, 3]$$

$$(x-1)(x-3)$$

$$\frac{w}{x+0} = w \rightarrow xw + kw = x + 0$$

$$xw - xw = kw - 0$$

$$x(w - kw) = kw - 0$$

$$x = \frac{kw - 0}{w - kw}$$

$$D_f = \{x \mid x = \frac{kw - 0}{w - kw}, k \in w\}$$

$$9 - \text{ب) } y = \log_r \left(1 - \log^{\frac{n}{r}} \frac{1}{r} \right) \rightarrow \log^{\frac{n}{r}} \rightarrow n > .$$

$$\hookrightarrow 1 - \log^{\frac{n}{r}} \frac{1}{r} > 0 \rightarrow \log^{\frac{n}{r}} \frac{1}{r} < 1 \xrightarrow{\text{مناسب (1,0)}} n > \frac{1}{r}$$

$$Df_2 \left(\frac{1}{r}, +\infty \right)$$