

۲۰. آزمون محاسباتی

الف) $2x^3 + 3x^2 - 11x + 3 \div (x-1) = 2x^2 + 5x - 3$ $\frac{(x+3)}{(x-1)} \rightarrow (-3)$
 $D_f = \mathbb{R} - \left\{ -\frac{3}{2}, 1, \frac{1}{2} \right\}$ $\frac{(x+4)(x-1)(x-1)}{(x-1)} \rightarrow (-3)$
 ب) $2x^3 + 9x^2 + 10x + 3 \div (x+1) = 2x^2 + 7x + 3$ $\frac{(x+3)}{(x+1)} \rightarrow (-3)$
 $D_f = \mathbb{R} - \left\{ -\frac{3}{2}, -1, -\frac{1}{2} \right\}$ $\frac{(x+4)(x+1)(x+1)}{(x+1)} \rightarrow (-3)$

الف) $2x^3 - 2x^2 + 2x - 1 \div (x-1) = 2x^2 - x + 1 \rightarrow \Delta < 0$ $\frac{(x+3)}{(x-1)(2x^2 - x + 1)}$
 $D_f = \mathbb{R} - \left\{ 1 \right\}$ $\Delta < 0$
 ب) $\frac{x+3}{(x-1)(2x^2 - x + 1)} \geq 0$ $\frac{-3}{+1 - \frac{1}{2} + \frac{1}{4}} \Rightarrow D_f = (-\infty, -3] \cup (1, +\infty)$

$x^2 - 5|x-1| - 2x + 5 \neq 0$
 $|x| \geq 1 \Rightarrow x^2 - 5x + 5 - 2x + 5 = x^2 - 7x + 10 = (x-2)(x-5) \neq 0$
 $|x| < 1 \Rightarrow x^2 - 5 + 5x - 2x + 5 \neq 0 \Rightarrow x^2 + 3x \neq 0 \Rightarrow x(x+3) \neq 0$
 $\Rightarrow D_f = \mathbb{R} - \left\{ 2, 5, 0, -3 \right\}$

الف) $[-x] - 2 \geq 0 \Rightarrow [-x] \geq 2 \Rightarrow D_f = (-\infty, -2]$

ب) $([x] - 3)([x] + 1) \neq 0$
 $[x] \neq -1 \Rightarrow [-1, 0)$
 $[x] \neq 3 \Rightarrow x \notin [3, 4)$
 $D_f = \mathbb{R} - \left\{ [-1, 0), [3, 4) \right\}$

الف) $[x - \frac{1}{3}] + [x + \frac{2}{3}] \geq 0 \Rightarrow [x - \frac{1}{3} + 1 - 1] + [x + \frac{2}{3}] \geq 0$
 $[x + \frac{2}{3}] - 1 + [x + \frac{2}{3}] \geq 0 \Rightarrow 2[x + \frac{2}{3}] \geq 1 \Rightarrow [x + \frac{2}{3}] \geq \frac{1}{2}$
 $x + \frac{2}{3} \geq 1 \Rightarrow x \geq \frac{1}{3} \Rightarrow D_f = [\frac{1}{3}, +\infty)$

ب) $[x - \frac{1}{3}] + [-(x - \frac{1}{3})] \geq 0 \Rightarrow [a] + [-a] \geq 0 \rightarrow a \in \mathbb{Z} \Rightarrow \odot \checkmark$
 $x - \frac{1}{3} \in \mathbb{Z} \Rightarrow D_f = \left\{ x \mid x = k + \frac{1}{3}, k \in \mathbb{Z} \right\}$ $a \notin \mathbb{Z} \Rightarrow \ominus \times$

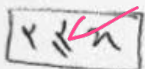
الف) $\tan n \neq -1$  $D_f = \mathbb{R} - \left\{ \frac{K\pi}{r}, K\pi - \frac{\pi}{r} \right\}$

ب) $1 - r \sin^2 n \geq 0 \quad \frac{1}{r} \geq \sin^2 n \quad -\frac{1}{r} \leq \sin n \leq \frac{1}{r}$
 $D_f = \left[K\pi - \frac{\pi}{r}, K\pi + \frac{\pi}{r} \right]$ 

الف) $r \sin n - 1 \geq 0 \quad r \sin n \geq 1 \quad \sin n \geq \frac{1}{r}$ 
 $D_f = \left[rK\pi + \frac{\pi}{r}, rK\pi + \frac{\pi}{r} \right]$

ب) $1 - r \cos n \geq 0 \quad 1 \geq r \cos n \quad \frac{1}{r} \geq \cos n$ 
 $\mathbb{R} - \left(rK\pi - \frac{\pi}{r}, rK\pi + \frac{\pi}{r} \right)$ 

الف) $-1 \leq n^r + \frac{1}{n} \leq 1$  $\Rightarrow D_f = [-1, 0] \cup [1, 0]$
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ب) $-1 \leq \sqrt{a - rn} \leq 1$
 $a - rn \leq 1 \quad r \leq rn \quad r \leq n$ 
 $\Rightarrow D_f = [r, +\infty)$

الف) $n > 0$ $1 - \log \frac{n}{r} > 0 \quad \log \frac{n}{r} < 1 \quad n < r \quad D_f = (0, r)$

ب) $n > 0$ $1 - \log \frac{n}{r} > 0 \quad 1 + \log \frac{n}{r} > 0 \quad \log \frac{n}{r} > -1$
 $n > r^{-1} \Rightarrow n > \frac{1}{r} \quad D_f = \left(\frac{1}{r}, +\infty \right)$

الف) $r^{fn-2r} - 1 \geq 0 \quad r^{fn-2r} \geq r^r \Rightarrow fn-2r \geq r$
 $n^r - fn + r \leq 0 \quad (n-r)(n-1) \leq 0 \quad D_f = [1, r]$

ب) $\frac{rn+d}{rn+r} \in W \quad n = -\frac{rw-d}{r^2w-r} \Rightarrow n = \frac{d-rk}{rk-r}$ 
 $D_f = \left\{ n \mid n = \frac{d-rk}{rk-r}, k \in W \right\}$