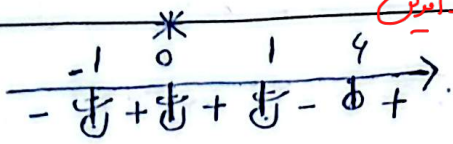
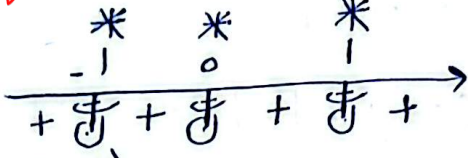


الف) $y = \sqrt{\frac{x^2 - 4x}{x^3 - x}} = \sqrt{\frac{x(x-4)}{x(x-1)(x+1)}}$ 

$D_f = [4, +\infty) \cup (0, 1) \cup (-1, 0)$ (۲) ✓

ب) $y = \sqrt{\frac{x^3 - x^4}{x^3 - x}} = \sqrt{\frac{x^3(x-1)(x+1)}{x(x-1)(x+1)}}$ 

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

الف) $y = \frac{x+1}{\sqrt{x+|x|}} = x/|x| > 0 \rightarrow x > -|x| \rightarrow D_f = \mathbb{R}^+ \setminus (0, +\infty)$

ب) $y = \frac{1}{\sqrt{x/|x|}} = x/|x| > 0 \rightarrow D_f = \mathbb{R}^+ \setminus (0, +\infty)$ (۲) ✓

الف) $y = \sqrt{2 - [x]} \rightarrow 2 - [x] \geq 0 \rightarrow [x] \leq 2 \rightarrow D_f = (-\infty, 3)$

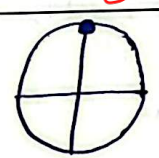
ب) $y = \frac{1}{\sqrt{2 - [x]}} \rightarrow 2 - [x] > 0 \rightarrow [x] < 2 \rightarrow D_f = (-\infty, 2)$ (۲) ✓

الف) $y = \sqrt{[x - \frac{1}{p}] + [x + \frac{p}{p}]} = 1 + [x - \frac{1}{p}] + [x + \frac{p}{p}] \geq 1 \rightarrow$

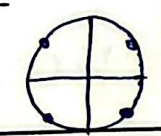
$[x + \frac{p}{p}] \geq 1 \rightarrow [x + \frac{p}{p}] \geq \frac{1}{p} \rightarrow x + \frac{p}{p} \geq 1 \rightarrow x \geq \frac{1}{p}$
 $D_f = [\frac{1}{p}, +\infty)$

ب) $y = \sqrt{[x - \frac{1}{p}] + [-x + \frac{1}{p}]} \xrightarrow{\text{if } [x] + [-x] = 0 \quad x \in \mathbb{Z}} [x] + [-x] = -1 \quad x \notin \mathbb{Z}$
 $x - \frac{1}{p} \in \mathbb{Z} \rightarrow D_f = \{x \mid x = k + \frac{1}{p}, k \in \mathbb{Z}\}$ (۲) ✓

الف) $y = \frac{p}{\sin x - 1} \rightarrow \sin x - 1 \neq 0 \rightarrow \sin x \neq 1$

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

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

$D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{p}\}$ 

الف) $y = \sqrt{r \sin x - 1} \rightarrow r \sin x - 1 \geq 0 \rightarrow \sin x \geq \frac{1}{r}$



$D_f = [rk\pi + \frac{\pi}{r}, rk\pi + \frac{\Delta\pi}{r}]$

✓

ب) $y = \sqrt{\cos x - 1} \rightarrow \cos x - 1 \geq 0 \rightarrow \cos x \geq 1$



$D_f = \{rk\pi\}$

الف) $\cos y = |x| - r \rightarrow -1 \leq |x| - r \leq 1 \rightarrow \begin{cases} r \leq |x| \\ |x| \leq r \end{cases}$

$D_f = [r, r] \cup [-r, -r]$

✓

ب) $y = \arcsin(x^r + rx + 1) \rightarrow -1 \leq x^r + rx + 1 \leq 1 \rightarrow$

$\begin{cases} x^r + rx \geq -2 \rightarrow (x+1)(x+r) \geq 0 \\ x^r + rx \leq 0 \rightarrow x(x+r) \leq 0 \end{cases}$

$D_f = [-1, 0] \cup [-r, -r]$

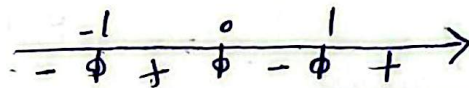
الف) $y = \sqrt{r - \log_r(x-r)} \Rightarrow x-r > 0 \rightarrow x > r$

$D_f = (r, 11]$

✓

ب) $y = \log(x^r - x) \Rightarrow x - x > 0 \rightarrow x(x-1)(x+1) > 0$

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



الف) $\frac{r}{r^rx + 1} \rightarrow r^rx + 1 \neq 0 \rightarrow r^rx \neq -1 \rightarrow D_f = \mathbb{R}$

✓

ب) $\frac{r}{r^rx - 1} \rightarrow r^rx - 1 \neq 0 \rightarrow r^rx \neq 1 \rightarrow x \neq 0 \rightarrow D_f = \mathbb{R} - \{0\}$

ج) $\frac{r}{r^rx - r} \rightarrow r^rx - r \neq 0 \rightarrow r^rx \neq r \rightarrow x \neq \frac{1}{r} \rightarrow D_f = \mathbb{R} - \{\frac{1}{r}\}$

د) $\frac{r}{r^rx - r} \rightarrow r^rx - r \neq 0 \rightarrow r^rx \neq r \rightarrow \log_r r \neq x \rightarrow D_f = \mathbb{R} - [\log_r r]$

الف) $y = (rx + 1)! \rightarrow rx + 1 \in \mathbb{W} \rightarrow rx \in \mathbb{W} - 1 \rightarrow$

$x \in \frac{\mathbb{W}-1}{r}$

$D_f = \{x | x = \frac{k-1}{r}, k \in \mathbb{W}\}$

ب) $y = (\frac{rx - r}{rx - \Delta})! \rightarrow \frac{rx - r}{rx - \Delta} \in \mathbb{W} \rightarrow rx - r = rWx - \Delta W \rightarrow$

$rx - rWx = -\Delta W + r \rightarrow x = \frac{-\Delta W + r}{r - rW}$

$D_f = \{x | x = \frac{-\Delta k + r}{r - rW}, k \in \mathbb{W}\}$