

الف) $\sqrt{\frac{x(x-2)}{x(x-1)(x+1)}}$ $D_f = (-1, 0) \cup (1, +\infty)$

ب) $\sqrt{\frac{x^2(x-1)(x+1)}{x(x-1)(x+1)}}$ $D_f = \mathbb{R} - \{-1, 0, 1\}$

الف) $x + |x| > 0 \Rightarrow \begin{matrix} x=0 \times \\ x>0 \checkmark \\ x<0 \times \end{matrix} \Rightarrow D_f = (0, +\infty)$

ب) $x|x| > 0 \Rightarrow \begin{matrix} x=0 \times \\ x>0 \checkmark \\ x<0 \times \end{matrix} \Rightarrow D_f = (0, +\infty)$

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

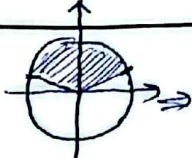
ب) $2 - [x] > 0 \Rightarrow [x] < 2 \Rightarrow D_f = (-\infty, 2)$

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

ب) $[x - \frac{1}{r}] + [-(x - \frac{1}{r})] \Rightarrow x - \frac{1}{r} \in \mathbb{Z} \Rightarrow D_f = \{x | x = k + \frac{1}{r}, k \in \mathbb{Z}\}$

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

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

$\Rightarrow r \sin x - 1 \geq 0 \Rightarrow r \sin x \geq 1 \Rightarrow \sin x \geq \frac{1}{r} \Rightarrow$

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

$\Rightarrow \cos x - 1 \geq 0 \Rightarrow \cos x \geq 1 \Rightarrow D_f = \{2k\pi\}$

$\text{الف) } |x| - 1 \leq |x| - r \leq 1 \Rightarrow r \leq |x| \leq r \Rightarrow \begin{cases} r \leq x \leq r \\ -r \leq x \leq -r \end{cases} \Rightarrow D_f = [r, r] \cup [-r, -r]$

$\Rightarrow \begin{cases} -1 \leq x^r + r x + 1 \leq 1 \\ x^r + r x + 1 \leq 1 \Rightarrow x^r + r x \leq 0 \Rightarrow x(x+r) \leq 0 \Rightarrow \frac{-r}{+} \leq x \leq \frac{0}{+} \\ x^r + r x + 1 \geq -1 \Rightarrow x^r + r x \geq -2 \Rightarrow (x+r)(x+1) \geq 0 \Rightarrow \frac{-r}{+} \leq x \leq \frac{-1}{+} \end{cases} \Rightarrow D_f = [-r, -r] \cup [-1, 0]$

$\text{الف) } x - r > 0 \Rightarrow x > r$
 $r - \log_r^{x-r} \geq 0 \Rightarrow \log_r^{x-r} \leq r \Rightarrow x - r \leq r \Rightarrow x \leq 11 \Rightarrow D_f = (r, 11]$

$\Rightarrow x^r - x > 0 \Rightarrow x(x-1)(x+1) > 0 \Rightarrow \frac{-1}{-} \leq x \leq \frac{0}{+} \Rightarrow D_f = (-1, 0) \cup (1, +\infty)$

$\text{الف) } r^x + 1 \neq 0 \Rightarrow r^x \neq -1 \Rightarrow D_f = \mathbb{R}$

$\Rightarrow r^x - 1 \neq 0 \Rightarrow r^x \neq 1 \Rightarrow x \neq 0 \Rightarrow D_f = \mathbb{R} - \{0\}$

$\Rightarrow r^x \neq r \Rightarrow x \neq \log_r r \Rightarrow D_f = \mathbb{R} - \{\log_r r\}$

$\Rightarrow r^x \neq r^r \Rightarrow x \neq \log_r r^r \Rightarrow D_f = \mathbb{R} - \{\log_r r^r\}$

$\text{الف) } f_{n+1} \in \mathbb{W} \Rightarrow f_n \in \mathbb{W} - 1 \Rightarrow n \in \frac{\mathbb{W}-1}{f} \Rightarrow D_f = \{n | n = \frac{k-1}{f}, k \in \mathbb{W}\}$

$\Rightarrow \frac{f_n - r}{f_n - d} \in \mathbb{W} \Rightarrow n = -\frac{-d\mathbb{W} + r}{f\mathbb{W} - r} = \frac{d\mathbb{W} - r}{f\mathbb{W} - r} \Rightarrow D_f = \{n | n = \frac{dk - r}{fk - r}, k \in \mathbb{W}\}$