

۱۹,۷۵

الف) $D_f = (-\infty, 0) \cup (2, +\infty)$

ب) $D_f = \mathbb{R} - \{-1, 0, 1\}$

الف) $n + |n| > 0$

$|n| > -n \Rightarrow D_f = (0, +\infty) \cup \{+\infty\}$

ب) $n|n| > 0 \Rightarrow D_f = (0, +\infty)$

الف) $2 - [n] \geq 0$

$[n] \leq 2 \Rightarrow D_f = (-\infty, 3)$

ب) $2 - [n] > 0$

$[n] < 2 \Rightarrow D_f = (-\infty, 2)$

الف) $(n - \frac{1}{n}) + (n + \frac{2}{n}) \geq 0 \Rightarrow (n + \frac{1}{n} - 1) + (n + \frac{2}{n}) \geq 0$

$(n + \frac{2}{n}) - 1 + (n + \frac{2}{n}) \geq 0 \rightarrow 2(n + \frac{2}{n}) \geq 1 \rightarrow (n + \frac{2}{n}) \geq \frac{1}{2}$

$n + \frac{2}{n} \geq \frac{1}{2} \rightarrow n \geq \frac{1}{n} \Rightarrow D_f = (\frac{1}{n} + \infty)$

ب) $[n] + [-n] \stackrel{n \in \mathbb{Z} = 0}{n \notin \mathbb{Z} = -1} \Rightarrow n - \frac{1}{n} \in \mathbb{Z} \Rightarrow D_f = \{n | n = k + \frac{1}{n}, k \in \mathbb{Z}\}$

الف) $\sin n - 1 \neq 0$

$\sin n \neq 1$

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

ب) $2 \sin^2 n - 1 \neq 0$

$2 \sin^2 n \neq 1$

$\sin^2 n \neq \frac{1}{2}$

$\sin n \neq \pm \frac{\sqrt{2}}{2}$

$\Rightarrow D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{4}\}$

✓

الف) $r \sin m - 1 \geq 0$ $r \sin m \geq 1$ $\sin m \geq \frac{1}{r}$ $D_f = \left[2k\pi + \frac{\pi}{4}, 2k\pi + \frac{3\pi}{4} \right]$ (ب) ✓	ب) $\cos m - 1 \geq 0$ $\cos m \geq 1$ $D_f = \{2k\pi\}$	6
الف) $-1 \leq m - r \leq 1$ $r \leq m \leq r+1 \Rightarrow r \leq m \leq r+1, -r-1 \leq m \leq -r$ $\Rightarrow D_f = [-r-1, -r] \cup [r, r+1]$ (ب) ✓	ب) $-1 \leq m^r + r m + 1 \leq 1$ $m^r + r m + 1 \geq -1 \quad m^r + r m + 1 \leq 1$ $m^r + r m + 2 \geq 0 \quad m^r + r m \leq 0$ $(I) \frac{-r-1}{r} \leq m \leq \frac{-r-1}{r} \quad (II) \frac{-r}{r} \leq m \leq \frac{-r}{r}$ $(-\infty, -r] \cup [-1, +\infty) \quad [-r, 0]$ $(I) \cap (II) \Rightarrow D_f = [-r-1, -r] \cup [-1, 0]$	7
الف) $m-r > 0 \quad r \log_p(m-r) \geq 0$ $m > r$ $\log_p(m-r) \leq 1$ $m-r \leq p$ $m \leq r+p$ $D_f = (r, r+p]$ (ب) ✓	ب) $m^r - m > 0$ $m(m^{r-1} - 1) > 0$ $m > 1$ $\frac{-1}{r} \leq m \leq \frac{1}{r}$ $D_f = (-1, 0) \cup (1, +\infty)$	8
الف) $r^m + 1 \neq 0$ $r^m \neq -1 \Rightarrow D_f = \mathbb{R}$ (ب) ✓ ب) $r^m - 1 \neq 0$ $r^m \neq 1 \Rightarrow m \neq 0 \quad D_f = \mathbb{R} - \{0\}$	ج) $r^m - r \neq 0$ $r^m \neq r$ $r^m \neq r^1 \Rightarrow D_f = \mathbb{R} - \{\log_r r\}$ $m \neq \frac{1}{r}$ $D_f = \mathbb{R} - \{\frac{1}{r}\}$	9
الف) $r m + 1 \in \mathbb{W}$ $r m \in \mathbb{W} - 1$ $m \in \frac{\mathbb{W} - 1}{r}$ $D_f = \left\{ m \mid m = \frac{k-1}{r}, k \in \mathbb{W} \right\}$ (ب) ✓	ب) $\frac{r m - r}{r m - 1} \in \mathbb{W}$ $r m - r \in r m - 1 \mathbb{W}$ $r m - r \mathbb{W} m \in r - 1 \mathbb{W}$ $m (r - r \mathbb{W}) \in r - 1 \mathbb{W}$ $m \in \frac{r - 1 \mathbb{W}}{r - r \mathbb{W}}$ $D_f = \left\{ m \mid m = \frac{r - 1 k}{r - r k}, k \in \mathbb{W} \right\}$	10