

الف) $\frac{n^2 - 4n}{n^2 - n} \geq 0 \rightarrow n(n-4)$

$\boxed{n=0}$
 $\boxed{n=4}$

$n^2 - n \neq 0$

$n(n^2 - 1) \neq 0$

$\boxed{n=0}$ $\boxed{n=\pm 1}$

$\frac{-1}{-1} + \frac{1}{1} + \frac{4}{4} - 1 +$

$(-\infty) \cup (0, 1) \cup [4, +\infty)$

ب) $\frac{n^2 - n^3}{n^2 - n} \geq 0 \rightarrow n^2(n^2 - 1)$

$\boxed{n=0}$ $\boxed{n=\pm 1}$

$n^2 - n \neq 0$

$n(n^2 - 1)$

$\boxed{n=\pm 1}$
 $\boxed{n=0}$

$\frac{-1}{-1} + \frac{1}{1} + \frac{4}{4} - 1 +$

$R = \{\pm 1, 0\}$

الف)

$n + |n| > 0$

$|n| > 0$

$D_f \rightarrow R^+ \cup (0, +\infty)$

ب) $n|n| > 0$

(R^+)

$D_f = R^+$

$n^2 \rightarrow \checkmark R^+$

$-n^2 \rightarrow R^-$

$0 \rightarrow 0$

$2 - [n] \geq 0$

$[n] \leq 2 \rightarrow n \leq 2$

$n \in \mathbb{Z}$

$D_f = (-\infty, 2)$

الف)

$2 - [n] > 0$

$[n] < 2 \rightarrow n < 2$

$(-\infty, 2)$

ب)

الف) $[n - \frac{1}{2}] + [n + \frac{1}{2}] \geq 0$

$[n] - \frac{1}{2} + [n] + \frac{1}{2} \geq 0$

$2[n] + \frac{1}{2} \geq 0$

$[n] \geq -\frac{1}{4} \rightarrow D_f = [-\frac{1}{4}, +\infty)$

ب) $[n - \frac{1}{2}] + [-n + \frac{1}{2}] \geq 0$

$[n] - \frac{1}{2} + [-n] + \frac{1}{2} \geq 0$

$[n] \geq -[-n] \rightarrow R = D_f = (-\infty, +\infty)$

$\sin n - 1 \neq 0$

$\sin n \neq 1$



$R = \{2k\pi + \frac{\pi}{2}\}$

الف)

$2\sin^2 n - 1 \neq 0$

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

$\sin n \neq \pm \sqrt{\frac{1}{2}} \rightarrow \sin n \neq \pm \frac{\sqrt{2}}{2} \Rightarrow \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$

$\frac{\pi}{4} = \frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$

$\cos n - 1 \geq 0$ $\cos n \geq 1$ $\sin n \geq \frac{1}{2}$ $\{2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}\}$	(الف) $\cos \theta - 1 \geq 0$ $\cos \theta \geq 1$ $\{2k\pi + 2\pi\}$	(ب)	6
(الف) $-1 \leq n - 2 \leq 1$ $2 \leq n \leq 5$ $2 \leq n \leq 5 \rightarrow [2, 5] \cup [-5, -2]$ $-5 \leq n \leq -2$	(الف) $-1 \leq n^2 + 2n + 1 \leq 1$ $n^2 + 2n + 2 \geq 0 \rightarrow (n+1)(n+1)$ $\frac{-2 \pm \sqrt{4-4}}{2} = -1$ $(-\infty, -1] \cup [-1, \infty)$ $n^2 + 2n \geq -2 \rightarrow n(n+2) \geq -2$ $n = -2$	(ب) $n^2 - n > 0$ $n(n-1) > 0$ $n = \pm 1$ $n = 0$	7
(الف) $2 - \log_e(n-2) \geq 0$ $\log_e(n-2) \leq 2$ $n-2 \leq e^2$ $n \leq 11$ $n > 2$ $(2, 11]$	(الف) $\varepsilon^n + 1 \neq 0$ $\varepsilon^n \neq -1 \rightarrow D_f = \mathbb{R}$	(ب) $\varepsilon^n - 1 \neq 0 \rightarrow \varepsilon^n \neq 1$ $n \neq 0$ $\mathbb{R} - \{0\}$	8
(الف) $\varepsilon^n + 1 \neq 0$ $\varepsilon^n \neq -1 \rightarrow D_f = \mathbb{R}$	(ب) $\varepsilon^n - 1 \neq 0 \rightarrow \varepsilon^n \neq 1$ $n \neq 0$ $\mathbb{R} - \{0\}$	(ب) $\varepsilon^n - 1 \neq 0 \rightarrow \varepsilon^n \neq 1$ $n \neq 0$ $\mathbb{R} - \{0\}$	9
(الف) $\varepsilon^n + 1 \neq 0$ $\varepsilon^n \neq -1 \rightarrow D_f = \mathbb{R}$	(ب) $\varepsilon^n - 1 \neq 0 \rightarrow \varepsilon^n \neq 1$ $n \neq 0$ $\mathbb{R} - \{0\}$	(ب) $\frac{2n-2}{2n-2} \in W \rightarrow 2nW - \Delta W = 2n-2$ $2nW - 2n = -2 + \Delta W$ $n(2W-2) = -2 + \Delta W$ $\frac{-2 + \Delta W}{2W-2} = n$ $\{n n = \frac{-2 + \Delta K}{2K-2}, K \in W\}$	10