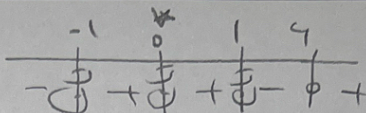
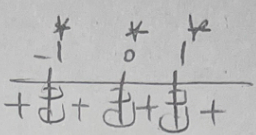


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الف) $\frac{n^2 - 4n}{n^2 - n} \geq 0 \quad \frac{n(n-4)}{n(n^2-1)} \geq 0$ 
 $D_f = (-1, 0) \cup (0, 1) \cup [4, +\infty)$

ب) $\frac{n^3 - n^2}{n^3 - n} \geq 0 \quad \frac{n^2(n^2-1)}{n(n^2-1)} \geq 0$ 
 $D_f = \mathbb{R} - \{0, 1\}$

الف) $n + |n| > 0 \rightarrow |n| > -n \rightarrow D_f = \mathbb{R}^+_{\rightarrow} = (0, +\infty)$

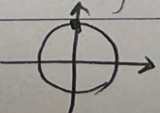
ب) $n|n| > 0 \quad (+) \quad D_f = \mathbb{R}^+_{\rightarrow} = (0, +\infty)$

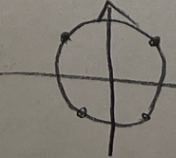
الف) $2 - [n] > 0 \rightarrow [n] < 2 \rightarrow n < 2 \quad D_f \Rightarrow (-\infty, 2)$

ب) $2 - [n] > 0 \rightarrow [n] < 2 \rightarrow n < 2 \quad D_f \Rightarrow (-\infty, 2)$

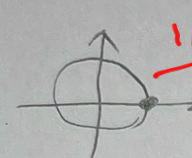
الف) $[n - \frac{1}{3}] + [n + \frac{2}{3}] \geq 0 \rightarrow [n + \frac{2}{3} - 1] + [n + \frac{2}{3}] \geq 0 \rightarrow [n + \frac{2}{3}] - 1 + [n + \frac{2}{3}] \geq 0 \Rightarrow 2[n + \frac{2}{3}] \geq 1 \rightarrow [n + \frac{2}{3}] \geq \frac{1}{2} \rightarrow n + \frac{2}{3} \geq 1 \rightarrow n \geq \frac{1}{3}$

$D_f = [\frac{1}{3}, +\infty)$
 ب) $[n - \frac{1}{3}] + [-n + \frac{1}{3}] \geq 0 \xrightarrow{a \in \mathbb{Z}} a \in \mathbb{Z} \quad [a] + [-a] = 0 \rightarrow n - \frac{1}{3} \in \mathbb{Z} \rightarrow D_f = \{n\}$
 $\xrightarrow{a \notin \mathbb{Z}} a \notin \mathbb{Z} \quad [a] + [-a] = -1 \quad n = \frac{1}{3} + n, n \in \mathbb{Z}$

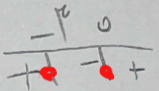
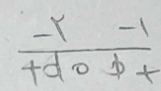
الف) $\sin n \neq 1 \quad D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{2}\}$ 

ب) $\sin^2 u \neq \frac{1}{4} \quad \sin u \neq \pm \sqrt{\frac{1}{4}}$ 
 $D_f = \mathbb{R} - \{k\pi + \frac{\pi}{4}, k\pi + \frac{3\pi}{4}\}$

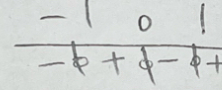
$\sin u \geq \frac{1}{2}$  $\frac{\pi}{6} \leq u \leq \frac{5\pi}{6}$ $D_f = \left\{ 2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6} \right\}$

$\cos u \geq 1$  $-1 \leq \cos u \leq 1$ $D_f = \{2k\pi\}$

الف) $-1 \leq |u-2| \leq 1 \rightarrow |u-2| \leq 1 \rightarrow |u| \leq 3 \rightarrow -3 \leq u \leq 3$
 $|u-2| \geq 1 \rightarrow |u| \geq 3 \rightarrow -3 \leq u \leq 3$
 $D_f = [-3, -1] \cup [1, 3]$

ب) $-1 \leq u^2 + u + 1 \leq 1 \Rightarrow u^2 + u \leq 0$ $u(u+1) \leq 0$ 
 $u^2 + u + 1 \geq -1 \Rightarrow u^2 + u + 2 \geq 0$ $(u+1)(u+2) \geq 0$ 
 $D_f = [-2, -1] \cup [-1, 0]$

الف) $u-2 > 0 \rightarrow u > 2$ $1 - \log_2(u-2) > 0 \rightarrow u-2 < 2 \rightarrow u < 4$
 $u \leq 11$ $D_f = (2, 11]$

$u^3 - u > 0 \rightarrow u(u^2 - 1) > 0$ 
 $D_f = (-1, 0) \cup (1, +\infty)$

الف) $\sqrt[n]{x} \neq -1$ $D_f = \mathbb{R}$

ب) $\sqrt[n]{x} \neq 1 \rightarrow x \neq 0 \rightarrow D_f = \mathbb{R} - \{0\}$

ج) $\sqrt[n]{x} \neq 2 \rightarrow x \neq 2^n \rightarrow D_f = \mathbb{R} - \{2^n\}$

د) $\sqrt[n]{x} \neq 3 \rightarrow x \neq 3^n \rightarrow D_f = \mathbb{R} - \{3^n\}$

الف) $\sqrt[n]{m} \in \omega - 1 \rightarrow u \in \frac{\omega-1}{f}$ $D_f = \left\{ u \mid u = \frac{k-1}{f}, k \in \omega \right\}$

ب) $\frac{\sqrt[n]{m}-2}{\sqrt[n]{m}-\omega} \in \omega \rightarrow \sqrt[n]{m}-2 = \sqrt[n]{m}-\omega \rightarrow \sqrt[n]{m}-\sqrt[n]{m} = +2-\omega$

$u = \frac{+2-\omega}{\sqrt[n]{m}-\sqrt[n]{m}} \rightarrow D_f = \left\{ u \mid u = \frac{\omega k - 2}{\sqrt[n]{m}-\sqrt[n]{m}}, k \in \omega \right\}$