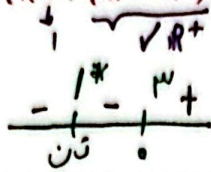


الف) $y = \frac{n+1}{n^3 - 2n^2 + 3n - 15}$ $n \neq 1$ $(n-1)(n^2 - 14n + 15) \neq 0$ $n^2 - 14n + 15 \rightarrow (n-1)(n-13)$ $D_f = \mathbb{R} - \{1, 13, 15, 2, 5\}$ $n + \frac{1}{n} = 15, n \neq \frac{1}{15} = 2, 5$ ب) $y = \frac{n+1}{n^3 - n^2 - 14n - 4}$ $n \neq -1$ $(n+1)(n^2 - 2n - 4) \neq 0$ $n^2 - 2n - 4 \rightarrow (n-1)(n+3)$ $D_f = \mathbb{R} - \{-1, -\frac{1}{2}, 2\}$ $n \neq -\frac{1}{2}, n \neq 2$	الف) $y = \frac{n+1}{n - \sqrt{3-2n}}$ $3-2n \geq 0 \rightarrow 2n \leq 3 \rightarrow n \leq \frac{3}{2}$ $n - \sqrt{3-2n} \neq 0 \rightarrow \sqrt{3-2n} \neq n \rightarrow 3-2n \neq n^2 \rightarrow n^2 + 2n - 3 \neq 0$ $(n-1)(n+3) \leq 1$ $D_f = (-\infty, \frac{3}{2}] - \{1\}$ ب) $y = \frac{n+2}{n - \sqrt{3n-2}}$ $3n-2 \geq 0 \rightarrow 3n \geq 2 \rightarrow n \geq \frac{2}{3}$ $n - \sqrt{3n-2} \neq 0 \rightarrow \sqrt{3n-2} \neq n \rightarrow 3n-2 \neq n^2 \rightarrow n^2 - 3n + 2 \neq 0$ $(n-1)(n-2) \neq 0$ $D_f = [\frac{2}{3}, +\infty) - \{1, 2\}$
الف) $y = \frac{\sin n}{2\cos n - 1}$ $2\cos n - 1 \neq 0$ $\cos n \neq \frac{1}{2}$ $D_f = \mathbb{R} - \{2k\pi - \frac{\pi}{3}, 2k\pi + \frac{\pi}{3}\}$ ب) $y = \frac{\cos n + 1}{2\sin n + 1}$ $2\sin n + 1 \neq 0$ $\sin n \neq -\frac{1}{2}$ $D_f = \mathbb{R} - \{2k\pi + \frac{7\pi}{6}, 2k\pi + \frac{11\pi}{6}\}$	الف) $y = \frac{\tan n + 2}{\cot n - 1}$ $\tan n \neq \frac{1}{2}$ $\cot n \neq 1$ $D_f = \mathbb{R} - \{k\pi + \frac{\pi}{4}, k\pi\}$ ب) $y = \frac{\sin n + 1}{2\sin^2 n - 3}$ $2\sin^2 n - 3 \neq 0$ $\sin^2 n \neq \frac{3}{2}$ $\sin n \neq \pm \sqrt{\frac{3}{2}}$ $D_f = \mathbb{R} - \{k\pi + \frac{\pi}{4}, k\pi - \frac{\pi}{4}\}$
الف) $n^2 - 5n + 4 > 0$ $(n-1)(n-4) > 0$ $D_f = (-\infty, 1) \cup (4, +\infty)$ ب) $n^2 - 4n + 5 < 0$ $(n-1)(n-4) < 0$ $D_f = (1, 4)$	الف) $n^2 - 3n + 2 < 0$ $(n-1)(n-2) < 0$ $D_f = (1, 2)$ ب) $n^2 - 7n + 12 > 0$ $(n-3)(n-4) > 0$ $D_f = (-\infty, 3) \cup (4, +\infty)$
الف) $\frac{n^2 - 3n + 2}{n - 5} < 0$ $(n-1)(n-2) < 0$ $D_f = (-\infty, 1) \cup (2, 5)$ ب) $\frac{n^2 - 1}{n^2 - 4n + 5} > 0$ $(n+1)(n-1) > 0$ $D_f = (-\infty, -1] \cup (1, +\infty)$	الف) $\frac{n^2 - 3n + 2}{n - 5} < 0$ $(n-1)(n-2) < 0$ $D_f = (1, 2)$ ب) $\frac{n^2 - 1}{n^2 - 4n + 5} > 0$ $(n+1)(n-1) > 0$ $D_f = (-\infty, -1] \cup (1, +\infty)$

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

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

$D_f = [3, +\infty)$



ب) $y = \sqrt{\frac{n^2 - 3n + 3}{n^2 - 1}}$

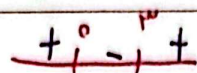
$n^2 - 1 \neq 0 \rightarrow n \neq -1, n \neq 1$

$D_f = \mathbb{R} - \{-1, 1\}$

2

الف) $y = \log(n^2 - 3n)$

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



ب) $y = \log|n-2|$

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

$|n-2| > 0 \rightarrow n \neq 2$

ج) $y = \log \frac{n^2 - 5n + 4}{n^2 - 3}$

$D_f = (3, 4) \cup (4, +\infty)$

د) $y = \sqrt{n^2 - 11n + 10} + \log \sqrt{4 - n^2}$

$D_f = (0, 2] \cup [4, +\infty)$

$4 - n^2 \geq 0 \rightarrow n \leq 2$

$y = \frac{n^2 - n}{n^2 + n}$

$D_f = \mathbb{R} - \{-1, 0\}$

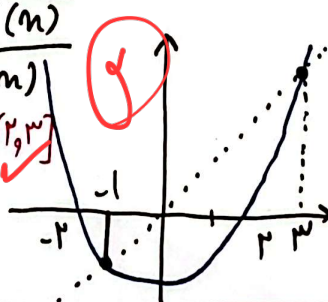
روشن آید:

روشن سریع:

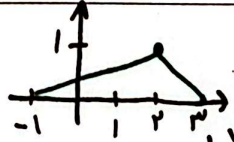
n	-1	0	1	2	3	4
$\frac{n^2 - n}{n^2 + n}$	+	0	+	-	+	+
$\frac{n^2 + n}{n^2 - n}$	+	0	-	0	+	+
f(n)	+	0	-	+	+	+

$y = \sqrt{\frac{n - f(n)}{f(n)}}$

$D_f = (-2, -1] \cup (3, 4]$



n	-2	-1	0	1	2	3	4
$\frac{n - f(n)}{f(n)}$	-	-	0	+	+	0	-
f(n)	+	0	-	-	0	+	+
P	-	+	+	+	+	+	-
$\frac{n - f(n)}{f(n)}$	-	+	+	+	+	+	-



الف) $f(n) + 1$

ب) $f(n-1)$

ج) $-f(n)$

د) $f(n+1) + 2$

