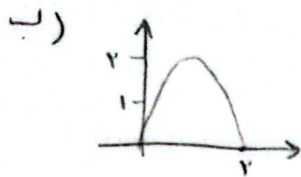
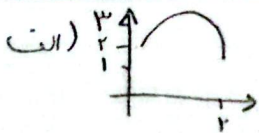
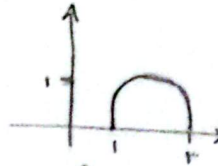


مسئله ۱

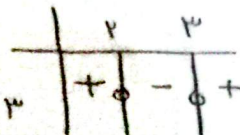


ج)



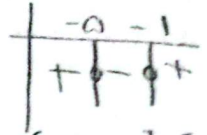
پ)

الف) $x^2 - 4x + 4 \geq 0$
 $x - 2 \quad x - 2$
 $x = 2 \quad x = 2$



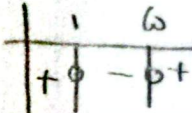
$D_f = (-\infty, 2) \cup (2, \infty)$

ج) $x^2 + 4x + 4 \geq 0$
 $(x + 2)(x + 2)$
 $x = -2 \quad x = -2$



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

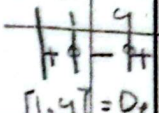
ب) $x^2 - 9x + 4 \leq 0$



$(x - 1)(x - 4) \quad x = 1 \quad x = 4$

$(1, 4) = D_f$

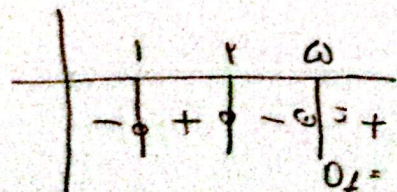
د) $x^2 - 5x + 4 \leq 0$
 $(x - 1)(x - 4)$
 $x = 1 \quad x = 4$



$[1, 4] = D_f$

الف) $\frac{x^2 - 3x + 2}{x - 5} < 0$
 $x - 1 \quad x - 2$
 $x = 1, 2, 5$

ب) $\frac{x^2 - 1}{x^2 - 4x + 4} \geq 0$
 $(x - 1)(x + 1)$
 $x = \pm 1$
 $(x - 1)(x - 4)$

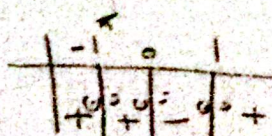


$D_f = (-\infty, 1) \cup (2, 5)$



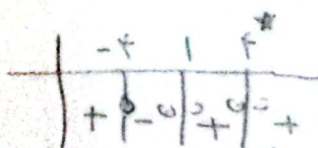
$D_f = (-\infty, -1] \cup (4, \infty)$

الف) $\frac{x^3 - 1}{x^2 - x} \geq 0$
 $(x + 1)(x^2 - x + 1)$
 $x(x - 1)(x + 1)$



$(-\infty, -1) \cup (-1, 0) \cup (1, \infty) = D_f$

ب) $\frac{x^2 - 19}{x^2 - 4x + 4} \geq 0$
 $(x - 4)(x + 4)$
 $(x - 4)(x - 1)$



$D_f = (-\infty, -4] \cup (1, 4) \cup (4, \infty)$

الف) $\sqrt{x} - \sqrt{x - 4}$

$x - 4 \geq 0$
 $x \geq 4$
 $\sqrt{x} - \sqrt{x - 4} \geq 0$
 $\sqrt{x} \geq \sqrt{x - 4}$
 $x \geq x - 4$
 $4 \geq 0$

$D_f = [-4, 4]$

ب) $\sqrt{x} - \sqrt{x - 2}$

$x - 2 \geq 0$
 $x \geq 2$
 $\sqrt{x} - \sqrt{x - 2} \geq 0$
 $\sqrt{x} \geq \sqrt{x - 2}$
 $x \geq x - 2$
 $2 \geq 0$

$D_f = [2, \infty)$

$\text{الف) } \sqrt{F-2n^2}$ $F-2n^2 \geq 0$ $F \geq 2n^2$ $2 \geq n^2$ $D_f = [-\sqrt{2}, \sqrt{2}]$ $-\sqrt{2} \leq n \leq \sqrt{2}$	$\text{ب) } \sqrt{3 n -9}$ $3 n -9 \geq 0$ $3 n \geq 9$ $ n \geq 3$ $3 \leq n$ $-3 \geq n$ $(-\infty, -3] \cup [3, \infty)$	6
$\text{الف) } = \sqrt[3]{\frac{ n +1}{ n -3}}$ $ n -3 \neq 0$ $ n \neq 3$ $n \neq 3$ $n \neq -3$ $D_f = \mathbb{R} - \{3, -3\}$	$\text{ب) } \sqrt[3]{\frac{\sqrt{n+1}}{\sqrt{n-3}}}$ $n \geq 0$ $\sqrt{n-3} \neq 0$ $\sqrt{n} \neq 3$ $n \neq 9$ $D_f = [0, 9) \cup (9, \infty)$	7
$\text{الف) } y = \frac{\sin n}{r \cos n - 1}$ $r \cos n - 1 \neq 0$ $\cos n \neq \frac{1}{r}$ $D_f = \mathbb{R} - \{r k \pi \pm \frac{\pi}{r}\}$	$\text{ج) } \frac{\frac{\sin n + r}{\cos n - 1}}{\frac{\cos n}{\sin n} \neq 1}$ $\cos n \neq 0$ $\sin n \neq 0$ $\frac{\cos n}{\sin n} \neq 1$ $D_f = \mathbb{R} - \{\frac{k\pi}{r}, k\pi + \frac{\pi}{r}\}$	$\text{د) } r \sin^2 n - 1 \neq 0$ $r \sin^2 n \neq 1$ $\sin^2 n \neq \frac{1}{r}$ $\sin n \neq \pm \frac{1}{\sqrt{r}}$ $D_f = \mathbb{R} - \{k\pi + \frac{\pi}{\sqrt{r}}, k\pi + \frac{r\pi}{\sqrt{r}}\}$
$r n-r - \frac{1}{r} > 0$ $r n-r > \frac{1}{r}$ $ n-r > \frac{1}{r^2}$ $n-r > \frac{1}{r^2} \Rightarrow n > \frac{1}{r^2} + r$ $n-r < -\frac{1}{r^2} \Rightarrow n < r - \frac{1}{r^2}$	$D_f = (-\infty, r - \frac{1}{r^2}) \cup (\frac{1}{r^2} + r, \infty)$	9
$\text{الف) } F-2 n \geq 0$ $F \geq 2 n $ $2 \geq n $ $-2 \leq n \leq 2$ $D_f = [-2, 2]$	$\text{ب) } \sqrt{\frac{ n }{ n }}$ $ n \neq 0$ $\frac{ n }{ n } \geq 0$ $ n \geq 0$ $D_f = \mathbb{R} - \{0\}$	10