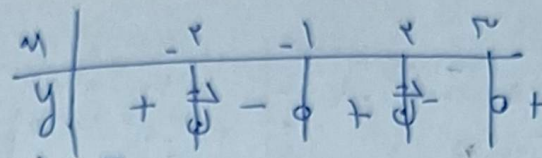
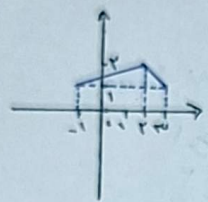
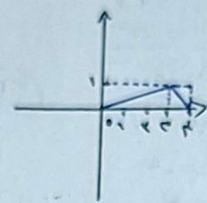
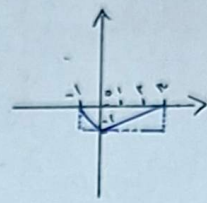
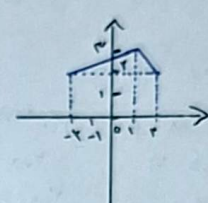


الف) $y = \frac{x+2}{x^3-2x^2+3x-14}$ $x^3-2x^2+3x-14=0$ بخش پذیر با ۱ $\Rightarrow$ $x^3-2x^2+3x-14 = (x-1)(x^2-x-14)$ $x^3-2x^2+3x-14 = x^3-x^2-x-14$ $-x^2+4x-14$ $-x^2+4x-14$ 0 $D_f = \mathbb{R} - \{1, 1 \pm \sqrt{15}\}$	ب) $y = \frac{x+2}{x^3-2x^2+3x-14}$ $x^3-2x^2+3x-14=0$ $x^3-2x^2+3x-14 = (x-1)(x^2-x-14)$ $x^3-2x^2+3x-14 = x^3-x^2-x-14$ $-x^2+4x-14$ $-x^2+4x-14$ 0 $D_f = \mathbb{R} - \left\{ \frac{1 \pm \sqrt{15}}{2} \right\}$																				
الف) $y = \frac{x+1}{x-\sqrt{x^2-2}}$ $x-\sqrt{x^2-2} \neq 0$ $\textcircled{I} x^2-2 \geq 0$ $-\sqrt{x^2-2} \neq -x$ $-x \geq -2$ $\sqrt{x^2-2} \neq x$ $x \geq 2$ $x^2-2 \neq x^2$ $x \geq \frac{2}{x}$ $x^2+2x-2 \neq 0$ $x \neq -3$ $\textcircled{I} \cap \textcircled{II} = (-\infty, -3) \cup (-2, 1) \cup (1, 2)$	ب) $y = \frac{x+2}{x-\sqrt{x^2-2}}$ $\textcircled{II} x^2-2 \geq 0$ $x-\sqrt{x^2-2} \neq 0$ $x^2 \geq 2$ $-\sqrt{x^2-2} \neq -x$ $x \geq \frac{2}{x}$ $\sqrt{x^2-2} \neq x$ $x^2-2 \neq x^2$ $x^2+2x-2 \neq 0$ $x \neq -3$ $\textcircled{I} \cap \textcircled{II} = \left[\frac{2}{x}, 2 \right) \cup (2, \infty)$																				
الف) $y = \sqrt{\frac{x^2-4x+3}{x^2-1}}$ $\textcircled{I} x^2-1 \neq 0$ $\textcircled{II} x^2-4x+3 \geq 0$ $x \neq \pm 1 \Rightarrow x \neq 1$ $(x-1)(x-3)$ <table border="1"> <tr><td>x</td><td>1</td><td>3</td></tr> <tr><td>y</td><td>-</td><td>+</td></tr> </table> <table border="1"> <tr><td>x</td><td>1</td><td>3</td></tr> <tr><td>y</td><td>+</td><td>-</td></tr> </table> $\textcircled{I} \cap \textcircled{II} D_f = [3, \infty)$	x	1	3	y	-	+	x	1	3	y	+	-	ب) $y = \sqrt{\frac{x^2-4x+3}{x^2-1}} \Rightarrow (x-1)(x-3)$ $(x-1)(x+1)$ <table border="1"> <tr><td>x</td><td>-1</td><td>1</td><td>3</td></tr> <tr><td>y</td><td>+</td><td>-</td><td>+</td></tr> </table> $D_f = \mathbb{R} - \{1, 3\}$	x	-1	1	3	y	+	-	+
x	1	3																			
y	-	+																			
x	1	3																			
y	+	-																			
x	-1	1	3																		
y	+	-	+																		
الف) $y = \log(x^2-2x)$ $x^2-2x > 0$ $x(x-2) > 0$ $\Rightarrow x > 2$ <table border="1"> <tr><td>x</td><td>0</td><td>2</td></tr> <tr><td>y</td><td>+</td><td>-</td></tr> </table> $D_f = (-\infty, 0] \cup [2, \infty)$	x	0	2	y	+	-	ب) $y = \log 1-x$ $1-x > 0 \Rightarrow 1-x > 0$ $-x < -1 \Rightarrow x > 1$ $1-x > 0 \Rightarrow x > 1$ $\Rightarrow x > 1, -x < 1$ $1-x \neq 1 \Rightarrow x \neq 2$ $\Rightarrow x \neq \pm 2$ $D_f = (-\infty, -2) \cup (-2, 1) \cup (1, 2) \cup (2, \infty)$														
x	0	2																			
y	+	-																			
الف) $y = \frac{x^2-1}{x^2+1}$ $\textcircled{1}$ سرج <table border="1"> <tr><td>x</td><td>-1</td><td>0</td><td>1</td></tr> <tr><td>y</td><td>+</td><td>-</td><td>+</td></tr> </table> $D_f = (-\infty, -1) \cup (-1, 0) \cup (0, \infty)$ or $\mathbb{R} - \{-1, 0\}$	x	-1	0	1	y	+	-	+	ب) $y = \frac{x^2-1}{x^2+1}$ $\textcircled{1}$ پلگانی <table border="1"> <tr><td>x</td><td>-1</td><td>0</td><td>1</td></tr> <tr><td>y</td><td>+</td><td>-</td><td>+</td></tr> </table> $D_f = \mathbb{R} - \{-1, 0\}$	x	-1	0	1	y	+	-	+				
x	-1	0	1																		
y	+	-	+																		
x	-1	0	1																		
y	+	-	+																		

$y = \frac{n \cdot f(n)}{f(n)}$ $n = f(n) \Rightarrow -1.5$ $f(n) \dots \Rightarrow -1.5$ $Df = (-\infty, -2) \cup [-1.5] \cup [2, +\infty)$		6		
الف) $f(n)+1$ 	ب) $f(n-1)$ 	ج) $-f(n)$ 	د) $f(n+1)+2$ 	7
$\left\{ \begin{aligned} f(n) &= \sqrt{n^2 - 2n} \\ n(n^2 - 2) \end{aligned} \right. \quad \frac{n}{y} \left \begin{array}{c} -\sqrt{2} \quad \sqrt{2} \\ -\phi + \phi - \phi + \end{array} \right.$ $Df = [-\sqrt{2}, \sqrt{2}] \cup [\sqrt{2}, +\infty)$ $\left\{ \begin{aligned} g(n) &= \sqrt{n} \sqrt{n^2 - 2} \Rightarrow Dg = [+\infty, +\infty) \\ \frac{n}{y} \left \begin{array}{c} -\sqrt{2} \quad \sqrt{2} \\ -\phi + \phi - \phi + \end{array} \right. \end{aligned} \right.$			8	
$\left\{ \begin{aligned} f(n) &= [\sqrt{n} - \sqrt{n}] \\ g(n) &= \sqrt{n} - \sqrt{n} \end{aligned} \right. \quad Df = \mathbb{R}^+ \cup \{0\} \Rightarrow$ $Dg = \mathbb{R}^+ \cup \{0\} \Rightarrow$			9	
الف) $f(n) = \sqrt{n n }$ و $g(n) = n$ (هم برای اعداد حقیقی تعریف نمی‌شود) $Df = \mathbb{R}^+ \cup \{0\}$ $Dg = \mathbb{R}$ برابر نیستند.	ب) $f(n) = \frac{n}{ n }$ و $g(n) = \frac{ n }{n}$ هر دو، دو شکل نوشتار مختلف تابع sgn هستند. برابر هستند.	10		