

الف) $x_1 = x_2$ $y_1^2 = 2x_1^2 + x_1$ $y_2^2 = 2x_2^2 + x_2$ $\Rightarrow y_1^2 = y_2^2 \rightarrow y_1 = y_2$ تابع است ✓

ب) $x=0$ $|y|=3 \Rightarrow y=-3$ $y=3$ مثال نقض $\rightarrow$ تابع نیست X

ج) $\sqrt{x-4} + |y+2| = 0$ $x=4$ $y=-2$ تابع است ✓

د) $x = \cos y \rightarrow x=0$ $|y|=1$ $|y|=1$ مثال نقض X

الف) $\frac{x+4}{x^2-6x}$ $x(x-6)=0$ $x=0$ $x=6$ $D_f = \mathbb{R} - \{0, 6\}$

ب) $x^2 - 7x + 12 = 0 \Rightarrow \Delta = 49 - 48 = 1$ $D_f = \mathbb{R}$

ج) $x^2 + x + 4 = 0 \Rightarrow \Delta = 1 - 16 = -15$ $D_f = \mathbb{R}$

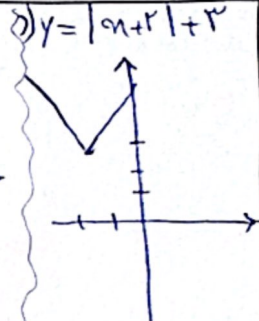
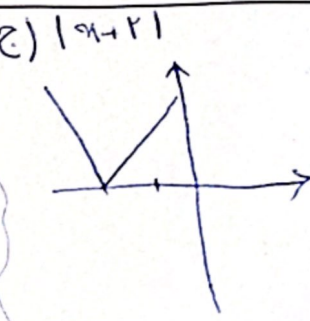
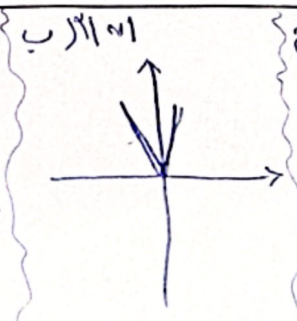
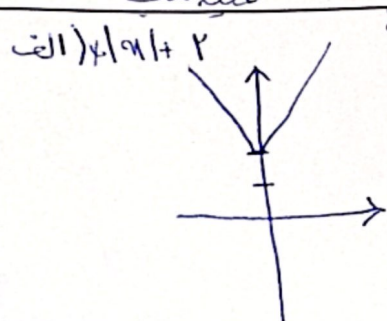
د) $x^4 - 4x^2 = 0$ $x^2(x^2 - 4) = 0 \Rightarrow x^2(x+2)(x-2) = 0 \Rightarrow D_f = \mathbb{R} - \{0, 2, -2\}$

الف) $y = \sqrt{6-x} + \sqrt{x-2}$ $6-x \geq 0$ $x-2 \geq 0 \Rightarrow D_f = [2, 6]$

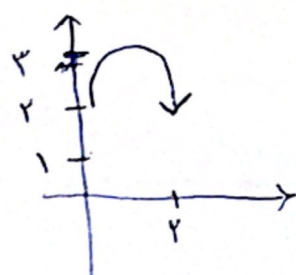
ب) $x^2 + 1 = 0$ $x^2 = -1$ $D_f = \mathbb{R}$

ج) $x-2 \geq 0$ $x \geq 2$ $x-4 \neq 0$ $x \neq 4$ $D_f = [2, +\infty) - \{4\}$

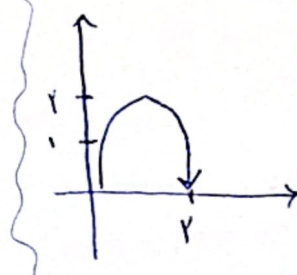
د) $|x| + x^2 \neq 0$ $D_f = \mathbb{R} - \{0\}$



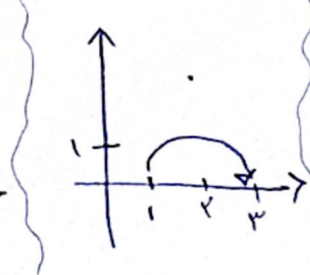
الف) $f(x) + 2$



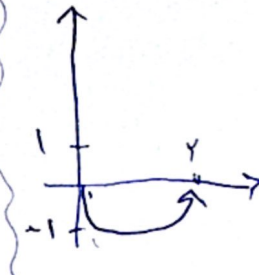
ب) $2f(x)$



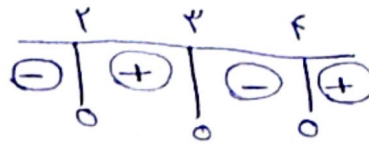
ج) $f(x-1)$



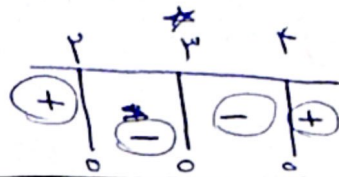
د) $-f(x)$



الف) $y = (n-2)(n-3)(n-4)$
 $n=2 \quad n=3 \quad n=4$

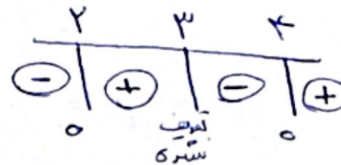


ب) $y = (n-2)(n-3)^2(n-4)$
 $n=2 \quad n=3 \quad n=4$



الف) $y = \frac{(n-2)(n-4)}{n-3}$

$n=3$
 $n=2$
 $n=4$



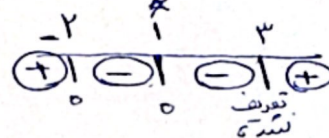
ب) $\frac{(n-2)(n-4)}{(n-3)^2}$

$n=2$
 $n=4$
 $n=3$



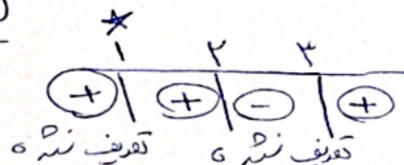
الف) $\frac{n^3-3n+2}{n-3} = \frac{(n-1)(n-1)(n+2)}{n-3}$
 $n=1 \quad n=-2 \quad n=3$

$\frac{n^3-3n+2}{n^2+n-2} = \frac{n-1}{n^2+n-2}$

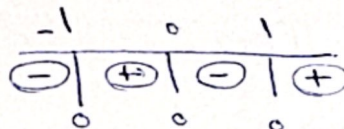


ب) $\frac{n^2-3n+2}{n^2-5n+4} = \frac{(n-1)(n-2)}{(n-1)(n-4)}$

$n=1 \quad n=2 \quad n=4$



الف) $\frac{n^4-n^2}{n^2+n+1} = \frac{n^2(n^2-1)}{n^2+n+1} \rightarrow \frac{n^2(n-1)(n+1)}{n^2+n+1}$
 $n=0 \quad n=1 \quad n=-1$



نکته

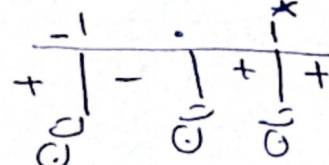
ب) $\frac{n^2+n+1}{n^2+2n+1} \Delta = b^2-4ac = 1-4 = -3$

$\Delta = b^2-4ac = 4-16 = -12$

نمی توان تعیین علامت کرد

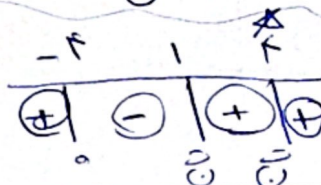
الف) $\sqrt{\frac{n^3-1}{n^3-n}} \Rightarrow \frac{(n-1)(n^2+n+1)}{n(n-1)(n+1)}$
 $n=0 \quad n=1 \quad n=-1$

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



ب) $\frac{(n-4)(n+4)}{(n-1)(n-2)}$

$n=1$
 $n=4$
 $n=-4$



$(4, +\infty) \cup (1, 2) \cup (-\infty, -4]$