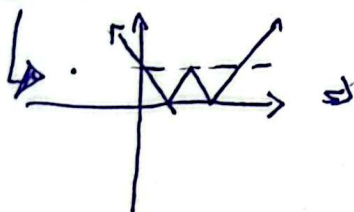


$f(x) = x^3 + 2x^2 + 1, 9x^2 - 6x + 1, m^2 + n^2 + mn \xrightarrow{\text{درجه دوم}} \begin{cases} m = -1 \\ n = 2 \end{cases}$
 $g(x) = \left\{ (f, \frac{1}{x}), (\frac{1}{x}, p+1), (\frac{-9}{p+2}, -1), (-9, p+4) \right\}$
 $p+1 = 1 \Rightarrow p = 0 \quad \downarrow \quad -11 + k = -1 \Rightarrow k = 10$
 $\Rightarrow m + n + p + k = (-1 + 2 + 0 + 10) = 11$

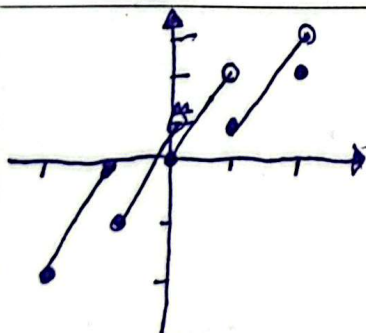
$g(x) = \sqrt{\frac{x-2}{(x^2-4)(x^2+2)}} \Rightarrow \frac{-2}{-1} \neq \frac{2}{-1} \Rightarrow x \in \mathbb{R} \setminus (-2, +\infty) - \{2\}$
 $[-2] = 2 \Rightarrow 2 \leq x < 3 \Rightarrow -2 < x \leq -1$
 $\Rightarrow x \in \mathbb{R} \setminus (-2, -1]$

$\begin{cases} x(x^2-1) \geq 0 \\ |x|+x \geq 0 \end{cases} \Rightarrow \frac{-1}{-1} + \frac{1}{-1} + \frac{1}{1} \Rightarrow x \in [1, +\infty)$
 $|x|+x \geq 0 \Rightarrow x \geq 0$
 $\Rightarrow f(x) = \sqrt{|x-2|-x^2} \Rightarrow |x-2|-x^2 \geq 0 \Rightarrow x^2 - x + 2 \leq 0 \Rightarrow x < 2 \Rightarrow x^2 + x - 2 \geq 0 \Rightarrow x \leq -2$
 $|x|-1 \rightarrow x \neq \pm 1$

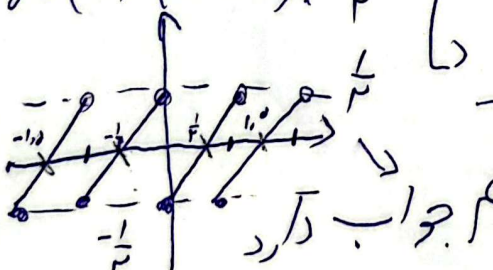
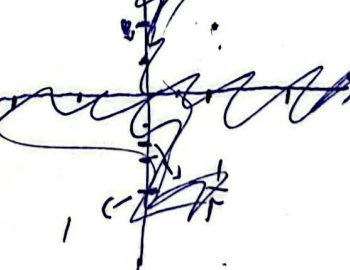
$|x+1|-1 < K \rightarrow$ در سه مورد



برای اینکه نمودار ۳ ریشه داشته باشد باید
نمودار ۱ واحد پایین تر از ریشه $K=1$



$g(x) = \begin{cases} 2x+2 & -2 \leq x < -1 \\ 2x+1 & -1 \leq x < 0 \\ 2x & 0 \leq x < 1 \\ 2x-1 & 1 \leq x < 2 \\ 2x-2 & x \leq 2 \end{cases}$

$f(x) = \frac{x^2 - 7x + 12}{x + a} + b \Rightarrow x = \frac{x^2 - 7x + 12}{x + a} \Rightarrow x - b = \frac{x^2 - 7x + 12}{x + a}$ $x(x + a) = x^2 + ax - bx - ab = x^2 - 7x + 12$ $(a - b)x = -7x + 12 \Rightarrow (a - b)x = -7x + 12 \Rightarrow a - b = -7$	6
$f(x) = g(x) \Rightarrow \left(x = \frac{1}{-1} \right) \Rightarrow x = 1$ $x < 1 \Rightarrow \frac{a + 1}{b + 1} < 1 \Rightarrow a + 1 < b + 1 \Rightarrow a < b$ $x > 1 \Rightarrow \frac{a + 1}{b + 1} > 1 \Rightarrow a + 1 > b + 1 \Rightarrow a > b$	7
$\Rightarrow f - g \in \{(1, k)\} \Rightarrow$ نتیجه داریم در هر دو حالت ۱ و ۲ از آنجا که f و g در $(1, k)$ قرار دارند، این با نتیجه $f(1) = g(1) = k$ سازگار است. $\sqrt{b - 1} < 0 \Rightarrow b < 1 \Rightarrow f - g \in (2k - 1) - (mk) \Rightarrow k - 1 < k$ $\sqrt{1 - a} < 0 \Rightarrow a < 1 \Rightarrow f - g \in (1 - 2k) - (mk) \Rightarrow 1 - k < k$	8
$D_f \subset [-1, +\infty) \mid D_f \cap D_g \subset [-1, 1] \Rightarrow m \leq 1$ $D_f = [-\infty, m] \mid D_f \cap D_g \subset [-1, 1] \Rightarrow m \leq 1$ $f(x) = \sqrt{x - 1} + 1, g(x) = \sqrt{x} \Rightarrow f - g(x) = \sqrt{x - 1} + 1 - \sqrt{x} \leq \sqrt{x} \Rightarrow 1 \leq \sqrt{x} \Rightarrow x \geq 1$	9
$y = (-1)^n (x - [n]) \left(1 - \frac{1}{p} \right) < 0$  	10

در f ، نقطه $\frac{1}{p}$