



$y^3 + 3y^2 + 3y + 2 = 0$ $y^3 + 3y^2 + 3y = -2$ $y_1^3 + 3y_1^2 + 3y_1 = y_2^3 + 3y_2^2 + 3y_2 \Rightarrow y_1 = y_2$ $(y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2) + 3(y_1 - y_2)(y_1 + y_2) = 0$	<p>(الف) $y_1 = 2 \Rightarrow y_1 = 2 \Rightarrow y_2 = 3 \Rightarrow y_2 = \pm 3$</p> <p>$y = \pm 3 \Rightarrow$ جواب دارد.</p> <p>چون به ازای هر یک جواب دارد.</p> <p>عبارت تابع مشتق $y_1 = -\frac{3y_2 + \sqrt{9y_2^2 - 4y_2^3}}{2}$</p> <p>$(y_1 - y_2)(y_1^2 + y_1 y_2 + y_2^2) = 0 \Rightarrow y_1 = y_2$</p> <p>$(y_1 - y_2)(y_1 + y_2) + (y_1 - y_2) = 0 \Rightarrow (y_1 - y_2)(y_1 + y_2 + 1) = 0$</p>
$f(x) = \frac{x^2 + 5x + 1}{x^2 + 5x + 11}$ $\frac{3+1}{3+11} = \frac{4}{14} = \frac{2}{7}$	$= \frac{x^2 + 5x + 1}{x^2 + 5x + 11} = \frac{(x+2)^2 + 1}{(x+2)^2 + 11}$ $\frac{x+2 = \sqrt{11}}{\sqrt{11} - 2} \Rightarrow \frac{(\sqrt{11} - 2)^2 + 1}{(\sqrt{11} - 2 + 2)^2 + 11}$ <p>(ب)</p>
$y = 2x - a$ $f(x) = x^2 + ax + b$ $f(x) = x^2 + 2x - 2$ $y = 2x - 1$	$-3 - a = -4 \Rightarrow a = 1$ $f(x) = x^2 + 2x + b \xrightarrow{x=-1} -1 - 1 + b = -4 \Rightarrow b = -2$ <p>(ب)</p> <p>$2x + 2 - 2 = 2x - 1 \Rightarrow 2x - 2x - 1 = 0$</p> <p>مجموع ضرایب زوج $2x - 2x - 1$</p> <p>با ضرایب فرد 0</p> <p>مجموع $0 = \frac{2x-1}{2} = 0$</p> <p>است \leftarrow به بر 0 بخش پذیر است.</p>
$a + b = 2a = a - 2b + 1 \Rightarrow 2a = \frac{a - 2b + 1}{-a} + 1 \Rightarrow 2a = 1 \Rightarrow a = \frac{1}{2}$ $a = b$	<p>تابع $f(x)$ است a, b است:</p> <p>$a = b = \frac{1}{2}$</p> <p>(ب)</p>
$\frac{ax^2 - ax + c + 1}{bx + 3} = 2x \Rightarrow ax^2 - ax + c + 1 = 2bx + 6$ $b = 4, a = -3, c = -1 \Rightarrow 4 + (-3) + (-1) = 0$	<p>تابع $f(x)$ است a, b, c است:</p> <p>$y = 2x$</p> <p>(ب)</p>