The root of a polynomial in new notation

The root of a polynomial can be understood in the following:

(1) The equation $x^2 - 4 = 0$ can be solved as $x = \pm 2$. While we try to solve the equation $x^2 - 3 = 0$ we cannot solve it in rational field. The method to find the root is to introduce a new notation $x = \pm\sqrt{3}.$ $\textit{the general notation is } n-th \textit{ root } x = \sqrt[n]{r}$

The notation n-th root can write the root of a polynomial if the degree of power less or equal to 4.

(2) If the power of a polynomial great or equal than 5 we cannot write the root in the n-th root notation $x = \sqrt[n]{r}$.

Our conjecture is if we introduce new notation

ñThe root of equation $x^n - (px + q) = 0$ is $x = \sqrt[n]{(p, q)}$ ò

We can use this notation to write the root of equation $x^n + a_1 x^{n-1} + \ldots + a_{n-1} x + a_n = 0$.

Maybe we need general notation

ñThe root of equation $x^n - (px^2 + qx + r) = 0$ is $x = \sqrt[n]{(p, q, r)}$ ò

if the power of polynomial is higher

Liu Shenquan

Professor of Department of Mathematics,

South China University of Technology,

Guangzhou, China, 510640

12/11/2012