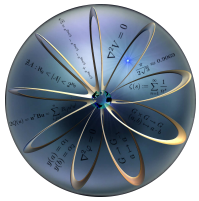

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fundamental theorem of symmetric polynomials

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Every symmetric polynomial $P(x_1, x_2, \ldots, x_n)$ in the indeterminates $x_1, x_2, \ldots, x_n$ can be expressed as a polynomial $Q(p_1, p_2, \ldots, p_n)$ in the elementary symmetric polynomials $p_1, p_2, \ldots, p_n$ of $x_1, x_2, \ldots, x_n$. The polynomial Q is unique, its coefficients are elements of the ring determined by the coefficients of P and its degree with respect to $p_1, p_2, \ldots, p_n$ is same as the degree of P with respect to x_1.