

opposite polynomial*

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The *opposite polynomial* of a polynomial P in a polynomial ring $R[X]$ is a polynomial $-P$ such that

$$P + (-P) = \mathbf{0},$$

where $\mathbf{0}$ denotes the zero polynomial. It is clear that $-P$ is obtained by changing the signs of all of the coefficients of P , i.e.

$$-\sum_{\nu=0}^n a_{\nu} X^{\nu} = \sum_{\nu=0}^n (-a_{\nu}) X^{\nu}.$$

The opposite polynomial may be used to define subtraction of polynomials:

$$P - Q =: P + (-Q)$$

Forming the opposite polynomial is a linear mapping $R[X] \rightarrow R[X]$.

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