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opposite number

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The *opposite number* of a number a is such a number $-a$ that

$$-a+a = 0.$$

Some properties:

- $-a = (-1) \cdot a$
- $-0 = 0$
- $-(-a) = a$
- $-(a+b) = (-a)+(-b)$
- $-(a \cdot b) = a \cdot (-b) = (-a) \cdot b$
- $-(a-b) = b-a$
- $-\sum_{j=1}^n a_j = \sum_{j=1}^n (-a_j)$
- $-\int_a^b f(x) dx = \int_b^a f(x) dx$

Exactly similar properties (except the last) are valid in every ring. The fifth property implies the

Corollary. If one changes the sign of one factor of a ring product, then the sign of the whole product changes.