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standard basis

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Defines	standard basis vectors

If R is a division ring, then the <http://planetmath.org/DirectSumdirect> sum of n copies of R ,

$$R^n = R \oplus \cdots \oplus R \text{ (n times),}$$

is a vector space.

The *standard basis for R^n* consists of n elements

$$e_1 = (1, 0, \dots, 0), \quad e_2 = (0, 1, 0, \dots, 0), \quad \dots \quad e_n = (0, \dots, 0, 1)$$

where each e_i has 1 for its i th component and 0 for every other component. The e_i are called the *standard basis vectors*.