



**Standard basis vectors**

Define  $e_i \in \mathbf{R}^n$  by  $[e_i]_j = 1$  if  $i = j$  and 0 otherwise. Then  $e_1, e_2, \dots, e_n \in \mathbf{R}^n$  are called the *standard basis vectors* (*canonical basis vectors*) for  $\mathbf{R}^n$ . For example, in  $\mathbf{R}^3$ ,

$$e_1 = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$$



