Writing Skills 2
Typesetting Matrices and Vectors

An mxn matrix is an array of m rows and n columns. The notation a_{ij} is used to denote the entry in the ith row and the jth column of a matrix A, so a general mxn matrix A has the form

$$\begin{bmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & a_{22} & \cdots & a_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ a_{m1} & a_{m2} & \cdots & a_{mn} \end{bmatrix}.$$

A vector $u \in \mathbb{R}^n$ is an n x 1 matrix. Thus, u has the form

$$u = \begin{bmatrix} u_1 \\ u_2 \\ \vdots \\ u_n \end{bmatrix}$$

where $u_1, u_2, \cdots, u_m$ are real numbers. To save space, it is often convenient to express a vector in terms of its transpose, so $u = [u_1, u_2, \cdots, u_n]^T$ and v