1. A function L is said to be a linear function if two conditions are met. What are the two conditions?

2. Complete the following definition of the product of two matrices A and B: the entry in row i and column j of the product AB is given by . . .

3. Define two matrices A and B by

$$A = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix} \qquad B = \begin{bmatrix} 1 & 2 & 3 \\ 0 & 1 & 2 \end{bmatrix}$$

Find the matrix products AB and BA.