FINC 305 LN1 - Math Review

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Linear algebra is the core for running linear regressions with one or multi variables.

1 Operation Reviews

1.1 Matrix Addition

$$(\mathbf{A} + \mathbf{B})_{ij} = a_{ij} + b_{ij}$$

For example:

$$\mathbf{A} + \mathbf{B} = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} + \begin{bmatrix} b_{11} & b_{12} \\ b_{21} & b_{22} \end{bmatrix} = \begin{bmatrix} a_{11} + b_{11} & a_{12} + b_{12} \\ a_{21} + b_{21} & a_{22} + b_{22} \end{bmatrix}$$

Two matrices cannot be added unless they have the same dimensions. For example, a 2 * 3 matrix (2 rows and 3 columns) and a 3 * 4 matrix (3 rows and 4 columns) cannot be added because their dimensions do not match. Matrix addition requires that the number of rows and columns in both matrices be identical so that corresponding elements can be added element-wise.