Notation

All vectors will be expressed as column vectors. The typographic convention used for a column vector **x** is $\vec{x}$. Row vectors will be represented by the transpose of a column vector. For example, if we wish to represent the row vector:

$$\begin{pmatrix} 1 & 2 & 3 \end{pmatrix}$$

we would first define a column vector:

$$\vec{x} = \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}$$

Then, the row vector would be expressed as:

$$\vec{x}^T = \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}^T = \begin{pmatrix} 1 & 2 & 3 \end{pmatrix}$$

The **MATLAB®** command “ x = [1 2 3]” generates a row vector. To generate a column vector in **MATLAB®** , we use the transpose command “.'” So, $\vec{x}$ of the previous example would be declared in **MATLAB®** by “ x = [1 2 3].'”. Note, that the **MATLAB®** command “ '” is really the *adjoint* (denoted as $\dagger$). The adjoint of a $\vec{x}$ is defined as the complex conjugate of the transpose of $\vec{x}$, i.e. $\vec{x}^\dagger = \vec{x}^{*T}$. Of course for real vectors, the adjoint and the transpose are the same. Just beware when dealing with complex vectors!