Some Useful Maple Commands

**Linear Algebra**

1. *Matrix*: used to create a matrix
   
   \[ A := \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix} \]

   One can also create a matrix as follows
   
   \[ A := \begin{bmatrix} \begin{bmatrix} 1 & 2 & 3 \end{bmatrix} \\ \begin{bmatrix} 4 & 5 & 6 \end{bmatrix} \end{bmatrix} \]

2. *Vector*: used to create a vector
   
   \[ B := \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix} \]

   Note: this creates a column vector. See maple help for how to use this command to create a row vector

3. *with(LinearAlgebra)*: loads LinearAlgebra package
   
   (a) *GenerateEquation*: used to create a system of linear equations given a matrix equation
   
   (b) *GenerateMatrix*: used to create a matrix given a system of linear equations
   
   (c) *Eigenvalues*: returns the eigenvalues of a matrix
   
   (d) *Eigenvectors*: returns the eigenvalues and eigenvectors of a matrix

**Differential Equations**

1. *dsolve*: used to solve a system of differential equations

2. *odeplot*: used to plot a solution constructed numerically by *dsolve*

3. *with(DEtools)*: loads the DEtools package
   
   (a) *DEplot*: used to plot the solutions (pairwise) to a system of equations, and if possible a direction field.
   
   (b) *DEplot3d*: used to plot a three dimensional representation of the solutions to a system of equations