**140131**

**MATLAB**

**On your terminals in C09 go to**

**Applications Menu**

**Choose**

**System Tools**

**Choose**

**Terminal**

**A terminal window will appear.**

**In that window enter**

**“matlab”**

**And MATLAB should open up.**

**In matlab a sequence of numbers in square brackets**

**Can specify a vector:**

**e.g. a = [0 1 2 3] creates a vector whose components**

**are (0,1,2,3).**

**Size(a) gives the dimensions “1 4” meaning a 1 row by 4 column matrix.**

**MATLAB stands for Matrix Laboratory. Items by default are matrices.**

**A vector is a 1 row or 1 column matrix. A scalar is a 1X1 matrix.**

**If A and B are two matrices in matlab**

**“C = A+B” produces the matrix C which is the sum of A & B**

**“D = A-B” produces the matrix D which is the difference of A & B**

**“E = A\*B” produces the matrix E which is the matrix product of A & B**

**“F = A’” produces the matrix F that is the transpose of the matrix A**

**If a and b are both 1Xm matrices, that is row vectors of dimension m**

**“a’” and “b’” are mX1 column matrices**

**“a\*b’” produces the scalar (1X1 matrix) which is the dot product of the vectors a and b – the “Inner Product”**

**“b’\*a” produces the mXm matrix of all the products of the components of the vectors a and b – the “Outer Product”**

**“a.\*b” produces a vector whose components are the products of the corresponding components of a and b .**

**For example**

**“u = [0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0]”**

**Followed by “v = u.\*u” produces**

**“[0 0.01 0.04 0.09 0.16 0.25 0.36 0.49 0.64 0.81]”**

**Going to the Help menu and selecting Product Help and putting**

**in a matlab command name gives help on that command.**

**For example in class today I used the help on the plot command.**

**“plot(x,y)” on two vectors x and y of equal length plots the elements of y vs. the elements of x.**

**Using u and v from the example above**

**“plot(u,v)” produces a plot of the parabola v=u2 .**

**Your turn: Using the vector u as above, without typing in the cubes by hand create a vector s of the cubes of the values in u and plot s=u3 .**