Summary of basic MATLAB commands for Linear Algebra

Entering a matrix

```
A=[a11,12;a21,a22]
```

(commas separate elements in a row, semicolons separate rows)
(easiest for direct data entry)

```
A=[a11    a12
a21       a22]
```

(tabs separate elements in a row, returns separate rows)
(useful for copying data from a table in Word or Excel)

Entering a column vector

```
b=[b1;b2;b3]
```

(an nx1 vector)

Entering a row vector

```
b=[b1,b2,b3]
```

(a 1xn vector)

determinant of a matrix

```
det(A)
```

(scalar)

rank of a matrix

```
rank(A)
```

(scalar)

inverse of an nxn matrix

```
inv(A)
```

(nxn matrix)

transpose of an nxm matrix or an nx1 vector

```
A=A'
```

(mxn matrix or 1xn vector)

solution of Ax=b

```
x=A\b or x=inv(A)*b
```

(nx1 vector)

reduced row echelon form of an nxn matrix

```
rref(A)
```

(nxn matrix)

eigenvalues and eigenvector of an nxn matrix

```
[w,lambda]=eig(A)
```

(w is an nxn matrix where each column is an eigenvector,
lambda is a nxn matrix where each diagonal element is an eigenvalue, off-diagonals are zero).