MATLAB Commands for Linear Algebra[1]
(Keep as a reference)

Making vectors: Unless otherwise specified, variables are row vectors (`1 x n` arrays). Here are examples of ways to form vectors. Try them:

- `b = [1 2 3 4]`

- `b = b'`

- `xx = 0:.1:2`

- `yy = linspace(0,3,13)`

Making matrices:

- `A = [1 2 3; 4 5 6]`

- `C = eye(3)`

- `D = ones(4)`

- `E = zeros(5,3)`

- `F = rand(2,3)`

- `G = randn(5)`

- `H = hilb(5)`

- `P = pascal(4)`

- Commands for other speciality matrices include: `gallery`, `hadamard`, `hankel`, `invhilb`, `magic`, `rosser`, `toeplitz`, `vander`, `wilkinson`.

Basic operations:

- `B = A'`

- `A*C`

- `C*A` .... Will not work, `C` is 3 by 3 and `A` is 2 by 3.

- `x = P \ b` .... Solves `Px=b`.

- `P*x` .... Checks the previous command.

Some speciality commands

- `[m n] = size(A)`

- `P = pascal(5), p = diag(P)`

- `diag(p)`

- `flipud(A)`

- `fliplr(A)`

- `v = randn(10,1), a = abs(v)`

- `s = sort(v), m = max(v)`

- `norm(v)`

- `norm(eye(4))`

- `D, N = Null(D), D*N`

- `rank(D)`

- `det(D)`

- `trace(D)`

- `inv(G), N*G, G*N`

- `cond(H)`

Some matrix decompostions:

- `[L U P] = lu(G)`

- `[V m] = eig(G)`

- `[U T] = schur(G)`

- `[Q R] = qr(G)`

- `[U S V] = svd(G)`