

Phys.494-Spring 2008
MATLAB-1

[A] **COMPLEX NUMBERS**

Type at the command prompt:

```
>> x=3
>> y=4
>> z=x+i*y
>> real(z)
>> imag(z)
>> conj(z)
>> sqrt(z)
>> r=abs(z)
>> theta=angle(z)
>> z1=r*exp(i*theta)
>> pi
>> exp(i*pi/2)
```

[B] **VECTORS**

Type at the command prompt:

```
>> v1=[1;i]           % column vector
>> w1=[1,i]          % row vector
>> v1'               % hermitian conjugate (transpose and conjugate) of v1
>> v1.'              % transpose of v1
>> v2=[1;-i]
>> v1'*v1            % norm of v1
>> v1'*v2            % overlap (scalar product) of v1 and v2
>> v2'*v2            % norm of v2
```

[C] **plot sinc(x)**

```
>> x=(-30:.5:30);    % (rows=1  $\times$  columns=121 element array)
                    % do not provide a list of values list(;)
>> r=x+eps;          % eps=epsilon
>> f=sin(r)./r ;     % Note the "./" implying element-by-element division
>> plot (r,f)
```