variable assignment

```
a = 1;
```

comments

```
% this is comment; % is both supported by Octave and Matlab
```

Command evaluation

```
t = 99 + 1
```

```
t = 100
```

```
t = 100
```

```
t = 100
```

```
t = 99 + 1;
disp(t)
```

```
    100
```

Elementary math

```
x = 3/4*pi;
y = sin(x)
```

```
y = 0.7071
```

Matrices

```
rowVec = [8 6 4]
```

```
rowVec = 1×3
     8     6     4
```

```
size(rowVec)
```

```
ans = 1×2
     1     3
```

```
columnVec = [8;6;4]
```

```
columnVec = 3×1
     8
     6
     4
```

```
size(columnVec)
```

```
ans = 1×2
     3     1
```

```
mat = [8,6,4;2,0,-2]
```

```
mat = 2×3
     8     6     4
     2     0    -2
```

```
size(mat)
```

```
ans = 1×2
     2     3
```

Linear Algebra

```
columnVec * rowVec
```

```
ans = 3×3
    64    48    32
    48    36    24
    32    24    16
```

```
rowVec * columnVec
```

```
ans = 116
```

```
columnVec'
```

```
ans = 1×3
     8     6     4
```

Accessing Elements

```
mat(2,3)
```

```
ans = -2
```

control flow

```
x = zeros(20,1);
for i = 1:2:20
    x(i) = i^2;
end %endfor is used in Octave, Octave is also support end syntax
```

```matlab
% doc(':')
disp(x)
```

```
     1
     0
     9
     0
    25
     0
    49
     0
    81
     0
   121
     0
   169
     0
   225
     0
   289
     0
   361
     0
```

```matlab
y = zeros(20,1);
k = 1;
step = 2;
while (k<=20)
    y(k) = k^2;
    k = k + step;
end
disp(y)
```

```
     1
     0
     9
     0
    25
     0
    49
     0
    81
     0
   121
     0
   169
     0
   225
     0
   289
     0
   361
     0
```
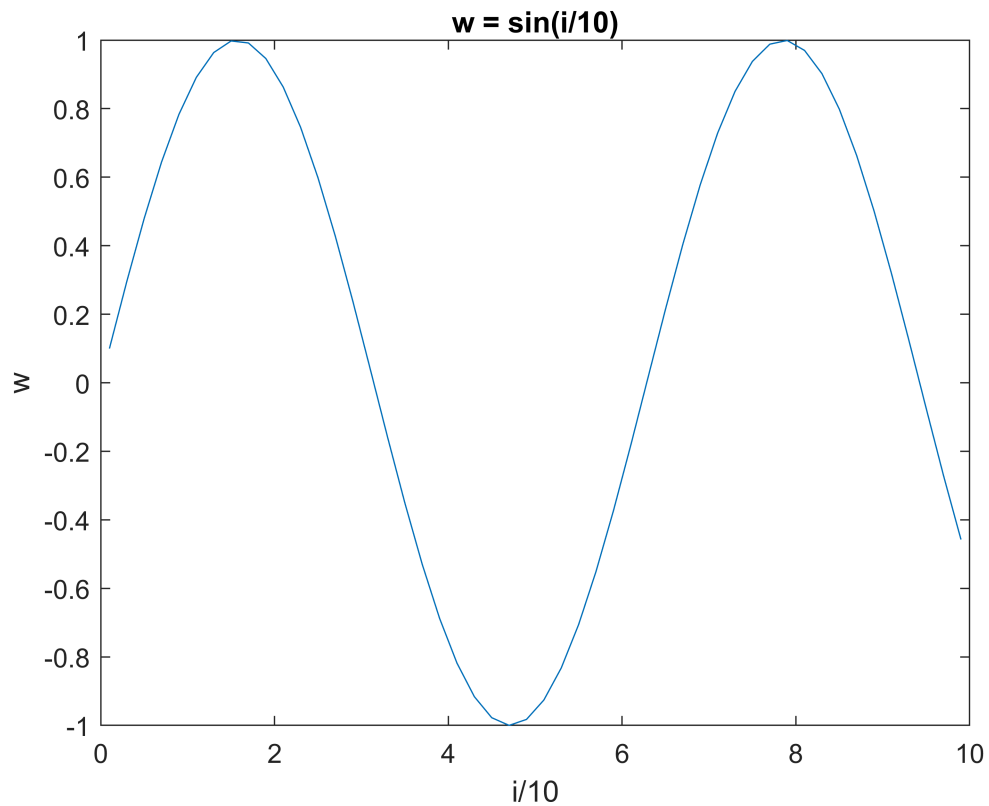
vectorization

```matlab
i = 1:2:100;
x = i.^2;
```

```
y = x + 9;
z = y./i;
w = sin(i/10);
```

plotting

```
plot(i/10, w);
title('w = sin(i/10)')
xlabel('i/10')
ylabel('w')
```


Strings

```
firstString = 'hello world'; %octave support '' for string (also "")
secondString = '!';
disp([firstString, secondString])
```

```
hello world!
```

```
fprintf('%s %.10f\n', 'The number is: ', 10)
```

```
The number is:  10.0000000000
```

If-else

```
if 3>2
    disp('hello')
else
    disp('world')
end
```

```
 hello
```

getting help

```
doc('plot') %personally recommand use this format
```

octave forge packages

```
% not needed for PHYS4150 course
```