Lecture 13

Instructor Lecture and Matlab Demonstration:

User-defined Functions:

```matlab
function output = poly3(coef,x)
    output = coef(4)*x.^3 + coef(3)*x.^2 + coef(2)*x + coef(1);
```

```matlab
x = -1:.1:1; coef = [4 -1 2 5], y = poly3(coef,x); plot(x,y)
```

```
********************
[ dist vel accel] = motion(t)     (see page 200)
```

```matlab
function [dist vel accel] = motion(t)
    accel = 0.5.*t;
    vel = accel.*t;
    dist = vel.*t;
    plot(t,dist)
```

```
[dist vel accel] = motion(0:1:4)
```

```
<table>
<thead>
<tr>
<th>t</th>
<th>dist</th>
<th>vel</th>
<th>accel</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.5000</td>
<td>0.5000</td>
<td>0.5000</td>
</tr>
<tr>
<td>1</td>
<td>4.0000</td>
<td>2.0000</td>
<td>1.0000</td>
</tr>
<tr>
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<td>13.5000</td>
<td>4.5000</td>
<td>1.5000</td>
</tr>
<tr>
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<td>32.0000</td>
<td>8.0000</td>
<td>2.0000</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

```
********************
Local and Global variables      (see page 207-212)
```

```matlab
function output = distance1(t)
g = 9.8;
output = 0.5*g*t.^2
```

```matlab
function output = distance2(g,t)
output = 0.5*g*t.^2
```

```matlab
function output = distance3(t)
global G
output = 0.5*G*t.^2
```

Student Matlab Computations:

Exercise 6.2  1-8, and f(x,y,z) = xy/z + e^x

Problem 6.7  Use local and global variables for 9.8 in h(t) = -9.8 t^2/2 +125t +500

Student Multiple Choice Questions:

Go to moodle, choose ma116 and answer the multiple choice questions.