Contents


```
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% MATH 3890
% Machine Problem 6
% 02 Mar 2021

clc; clear; close all
```

Get Triangulation Data

```
% get triangulation data
% n = number of points/vertices
% nt = number of triangles
% (x, y) = coordinates
% TRI = triangle-vertex matrix
[n,x,y,nt,TRI] = readtri;
```

Plot the Triangulation

```
triplot(TRI,x,y);
```

Create lists

```
[v1,v2,v3,e1,e2,e3,ie1,ie2,area] = mylists(x,y,TRI);
```

Print tables

```
tbl = table;
tbl.i = [1:nt]';
tbl.v1 = v1;
tbl.v2 = v2;
tbl.v3 = v3;
tbl.e1 = e1;
tbl.e2 = e2;
tbl.e3 = e3;
tbl.area = area;
%
tbl2 = table;
tbl2.i = [1:length(ie1)]';
tbl2.ie1 = ie1;
```

```
tbl2.ie2 = ie2;
%
fprintf('\n\n Triangles \n\n')
disp(tbl)
fprintf('\n\n Edges \n\n')
disp(tbl2)
```

Label edges, vertices, and triangles

```
% label vertices
hold on
a = [1:n]'; b = num2str(a); c = cellstr(b);
text(x, y, c, 'FontSize', 16, 'FontWeight', 'bold', 'Color', 'Red');
% label edges
a = [1:length(ie1)]'; b = num2str(a); c = cellstr(b);
text(0.5*(x(ie1) + x(ie2)), 0.5*(y(ie1) + y(ie2)), c, ....
    'FontSize', 11, 'Color', 'Blue');
% label triangles
a = [1:nt]'; b = num2str(a); c = cellstr(b);
xt = (1/3)*(x(v1) + x(v2) + x(v3));
yt = (1/3)*(y(v1) + y(v2) + y(v3));
text(xt, yt, c, 'FontSize', 20, 'FontWeight', 'bold', 'Color', 'Green');
```

```
file name for triangulation   "tri8.dat"
```

```
 Triangles
```

i	v1	v2	v3	e1	e2	e3	area
1	1	4	5	2	9	3	0.1
2	1	5	2	3	5	1	0.1
3	2	5	6	5	11	6	0.13
4	2	6	3	6	7	4	0.1325
5	4	7	5	10	12	9	0.1
6	5	7	6	12	13	11	0.125
7	6	7	8	13	15	14	0.19
8	3	6	8	7	14	8	0.1225

```
 Edges
```

i	ie1	ie2

1	1	2
2	1	4
3	1	5
4	2	3
5	2	5
6	2	6
7	3	6
8	3	8
9	4	5
10	4	7
11	5	6
12	5	7
13	6	7
14	6	8
15	7	8