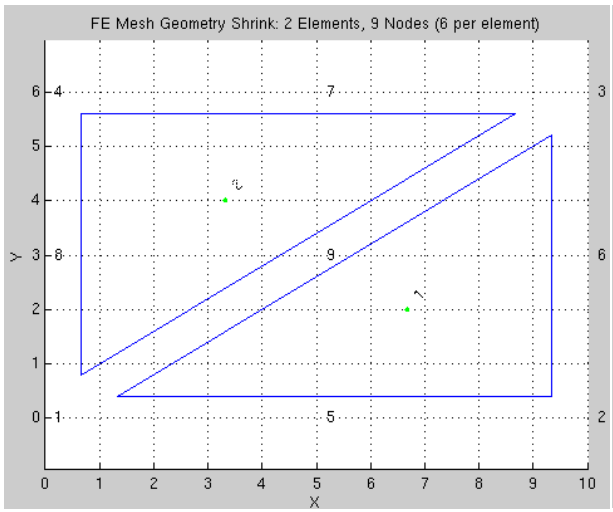
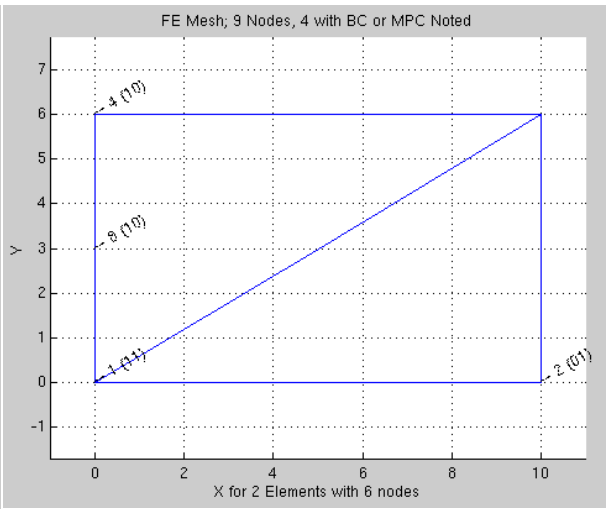
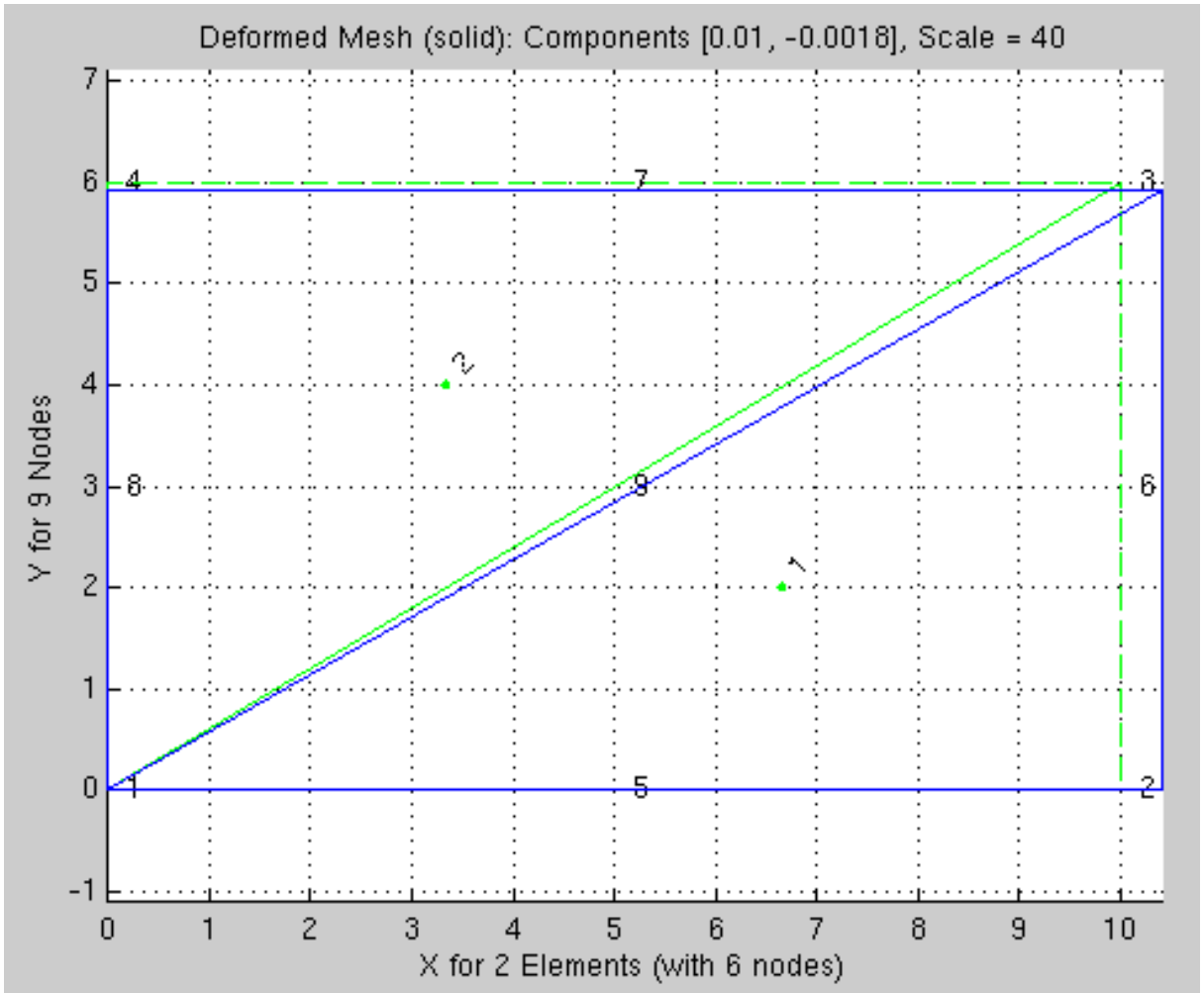
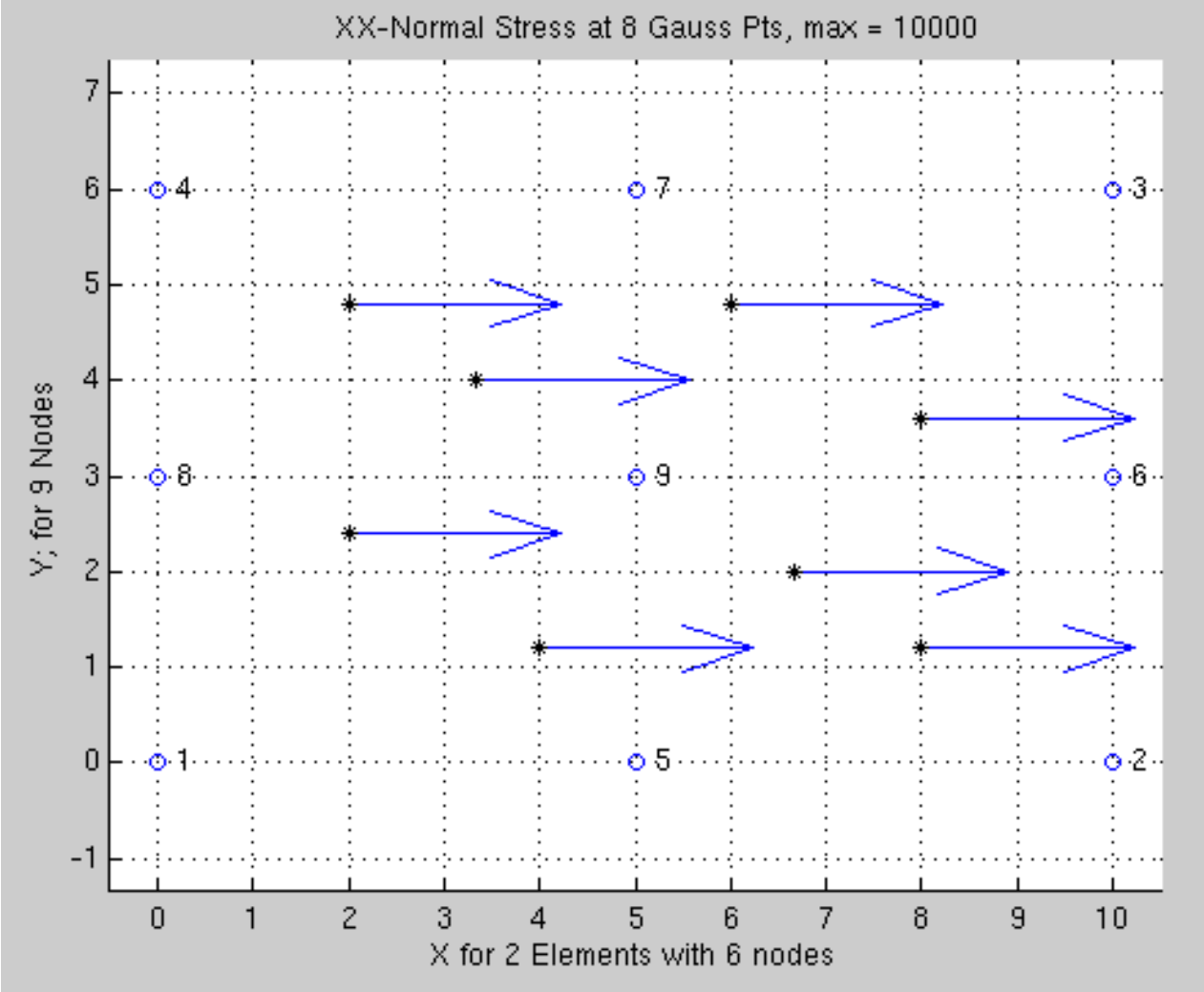

FE Mesh Geometry Shrink: 2 Elements, 9 Nodes (6 per element)
X


FE Mesh; 9 Nodes, 4 with BC or MPC Noted
4 (10)
8 (10)
1 (11)
2 (01)
X for 2 Elements with 6 nodes


Deformed Mesh (solid): Components [0.01, -0.0018], Scale = 40
Y for 9 Nodes
X for 2 Elements (with 6 nodes)




```
>> Plane_Stress_T6_Isoparametric(1)

(Echo of msh_remarks.tmp)
=================== Begin Application Remarks ==================
Numerical check of Ex. i3.13 Buchanan "FEA" Schauum Outline
via six-noded isoparametric triangles with numerical integration

vertical roller 4--------7----------3   Fx_3 = 2000
                |                /  |
                |  (2)       /      |
vertical roller 8        9          6   Fx_6 = 8000
                |     /     (1)     |
                |  /                |
           pin  1--------5----------2   Fx_2 = 2000
                                horizontal roller

Nodal dof: x- and y-deflection
Element type = 1 (a plane stress, everywhere)
Element connection: six nodes per element
```

```
Element properties 6 (columns in msh_properties.tmp):
modulus (E), Poisson ratio (nu), x-body force (Body_x),
y-body force (Body_y), thickness (Thick), density (Rho)
Rho = any value (not used in statics)
==================== End Application Remarks ==================

Read 9 nodes.
(Echo of file msh_bc_xyz.tmp)
bc_flags, 2 coordinates
 11   0     0
 01   10    0
 00   10    6
 10   0     6
 00   5     0
 00   10    3
 00   5     6
 10   0     3
 00   5     3
Note: expecting 5 displacement BC values.

Read 2 elements with (ignored) type & 6 nodes each.
(Echo of file msh_typ_nodes.tmp)
     1     1     2     3     5     6     9
     1     1     3     4     9     7     8

Read 5 EBC data sets with Node, DOF, Value.
(Echo of file msh_ebc.tmp)
     1     1     0
     1     2     0
     2     2     0
     4     1     0
     8     1     0

Read 3 point sources. (Echo of msh_load_pt.tmp)
Node, DOF,  Source_value
2  1  2000
6  1  8000
3  1  2000

(Echoing file msh_properties.tmp)
6 homogeneous material values
1.0000e+07   3.0000e-01  0  0  2.0000e-01  0

Resultant input sources:
Node, DOF, Resultant input sources
2 1 2000
3 1 2000
6 1 8000
Totals =        12000           0

Computed Solution:
Node, 2 results per node
1   0      0
2   0.01   0
3   0.01   -0.0018
4   0      -0.0018
5   0.005  4.25606e-12
```

```
6   0.01   -0.0009
7   0.005  -0.0018
8   0      -0.0009
9   0.005  -0.0009

Reactions at Displacement BCs
Node, DOF, Reaction Value
1     1    -2000
1     2    -1.23879e-05
2     2    1.23879e-05
4     1    -2000
8     1    -8000
Totals =    1.0e+04 * [ -1.2000   -0.0000]

Element Post-processing:
Point       x-, y-coordinates
            3 stresses: s_xx, s_yy, s_xy
            von Mises, max shear
Element number 1 _____________________
1, 6.66667, 2
1, 10000, 4.54747e-13, 3.54451e-12
1, 9999.9, 5000
2, 4, 1.2
2, 10000, 3.63798e-12, -1.61588e-12
2, 9999.9, 5000
3, 8, 3.6
3, 10000, -3.18323e-12, 2.91901e-12
3, 9999.9, 5000
4, 8, 1.2
4, 10000, -5.91172e-12, 9.90377e-13
4, 9999.9, 5000

Element number 2 _____________________
1, 3.33333, 4
1, 10000, 0, -9.38252e-13
1, 9999.9, 5000
2, 2, 2.4
2, 10000, -5.00222e-12, -2.085e-12
2, 9999.9, 5000
3, 2, 4.8
3, 10000, -9.09495e-13, -1.98075e-12
3, 9999.9, 5000
4, 6, 4.8
4, 10000, 0, 2.50201e-12
4, 9999.9, 5000

>> addpath /net/course-a/mech517/public_html/Matlab_Plots
>> bc_flags_plot
>> deformed_mesh_plot(40,1,1,1)
Suggested scale = 50
>> color_result
>> color_result(1)
>> color_result(2)
>> quiver_el_qp_xyStress (5,1,1)
```