3.)

Member or Reaction	Load Case A	Load Case B	Load Case C	Load Case D
AB	2383.3(C)	433.0127(C)	4000(T)	0.8660(T)
AD	0566.6(T)	866.0254(T)	0	1.7321(C)
BC	3999.9(C)	433.0127(C)	0	0.8660
BD	3233.2(C)	0	0	0
CD	4618.7(T)	500.0000(T)	0	1.0000(C)
A_x	2100.0	0	4000	0
A_y	490.7	750.0000	0	-1.5000
C_y	2309.3	250.0000	3000	-0.5000

The truss is unstable for load case 'D' because the force Cy is unable to provide a negative force downward on the truss since it is a cable. It can only pull up, and so the truss would rotate with this load.

Command Window:
TrussMatrix =

```
   1.0000    0.5000         0         0         0   -1.0000         0         0
        0   -0.8660         0         0         0         0    1.0000         0
   -1.0000         0    1.0000   -0.5000         0         0         0         0
        0         0         0   -0.8660         0         0         0         0
        0         0   -1.0000         0   -0.8660         0         0         0
        0         0         0         0   -0.5000         0         0    1.0000
        0   -0.5000         0    0.5000    0.8660         0         0         0
        0    0.8660         0    0.8660    0.5000         0         0         0
```

LoadMatrix =

```
         0
         0
         0
     -2800
         0
         0
     -2100
         0
```

```
Unknowns =
  1.0e+003 *
   -2.3833
    0.5666
   -3.9999
   -3.2332
    4.6187
   -2.1000
    0.4907
    2.3093


Tab = -2.3833e+003
Tad =  566.5808
Tbc = -3.9999e+003
Tbd =-3.2332e+003
Tcd = 4.6187e+003
Ax = -2100
Ay =  490.6733
Cy = 2.3093e+003


LoadMatrix =
          0
          0
          0
          0
          0
          0
          0
      -1000

Unknowns =
 -433.0127
  866.0254
 -433.0127
        0
  500.0000
        0
  750.0000
  250.0000

Tab = -433.0127
Tad =  866.0254
Tbc = -433.0127
Tbd = 0
Tcd =  500.0000
```

```
Ax = 0
Ay =  750.0000
Cy = 250.0000

LoadMatrix =

         0
         0
      4000
         0
         0
     -3000
         0
         0

Unknowns =
      4000
         0
         0
         0
         0
      4000
         0
      3000

Tab = 4000
Tad = 0
Tbc = 0
Tbd = 0
Tcd = 0
Ax =4000
Ay = 0
Cy = 3000

LoadMatrix =
         0
         0
         0
         0
         0
         0
         0
      2000

Unknowns =
  1.0e+003 *
    0.8660
   -1.7321
```

```
    0.8660
         0
   -1.0000
         0
   -1.5000
   -0.5000

Tab = 866.0254
Tad = -1.7321e+003
Tbc =  866.0254
Tbd = 0
Tcd = -1.0000e+003
Ax = 0
Ay = -1.5000e+003
Cy = -500.0000
```