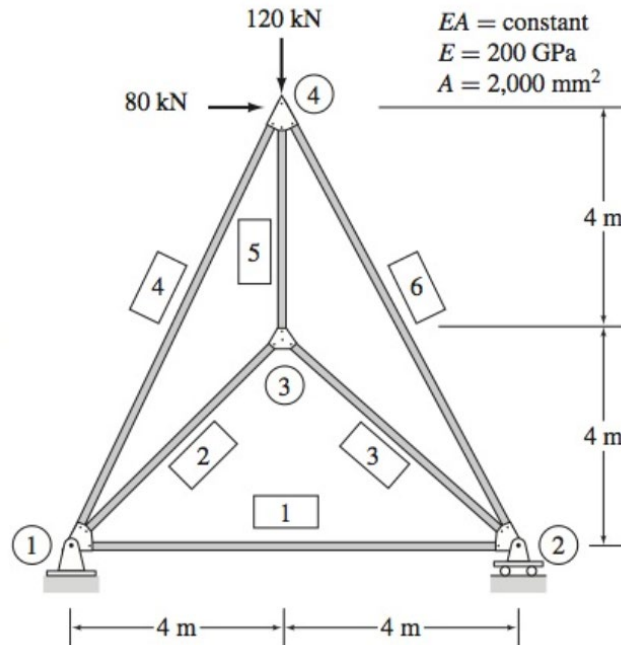## Department of Civil and Environmental Engineering

CIVE 4320/5320 – Computer-Aided Analysis of Structures
2-Tutorial Example Handout (Matrix Stiffness Method: Trusses)

Using SAP2000, determine the joint displacements, member axial forces, and support reactions for the truss shown below.

Take:
E = 200 GPa (29000 ksi),
A = 2000 mm^2 (3.1 in.^{2}),
Py = 120 kN (26.98 k) and
Pz = 80 kN (17.98 k).

Your submission must also include neat tables for the followings:

a) Joint displacements table must have three columns as follows: Joint No, X Disp. (mm) and Y Disp. (mm).

b) Member axial force table must have three columns as follows: Member, Axial Force (kN), and Action. Members must be named with two joint numbers from left to right, e.g., Member 1-4, Member 4-2. Actions can be either T for Tension or C for compression.

c) Support reaction table must have 3 columns as follows: Joint, X-Reaction (kN) and Y-Reaction (kN). The table will have two rows. Negative signs must be used for the reaction values acting in the opposite direction of the global coordinate system.

d) Print the deflected shape, superimposed on the undeflected shape, from SAP2000 as a part of your submission.