

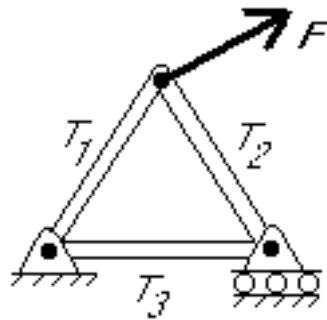
# Introduction

Determinate linear systems:

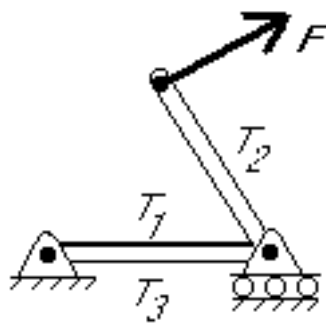
- Trusses;
- FEM codes;
- Finite difference codes;
- Economics;
- Design optimization;
- CAD/CAM;
- ...

For a unique solution (under all conditions):

- The number of equations must be the number of unknowns (square matrix  $A$ );



- The matrix must be nonsingular (the determinant  $|A|$  must be nonzero).



Cramer's rule is useless for anything but very small systems. The general purpose method is Gaussian elimination (LU-decomposition.)