

# ME 3001 Lecture, Systems of Linear Equations

## A Brief Review of Linear Algebra in MATLAB

- **General Form of A Linear System (review)**

- The System of Equations

$$\begin{aligned}a_{11}x_1 + a_{12}x_2 + \dots + a_{1n}x_n &= b_1 \\a_{21}x_1 + a_{22}x_2 + \dots + a_{2n}x_n &= b_2 \\&\vdots \\a_{n1}x_1 + a_{n2}x_2 + \dots + a_{nn}x_n &= b_n\end{aligned}$$

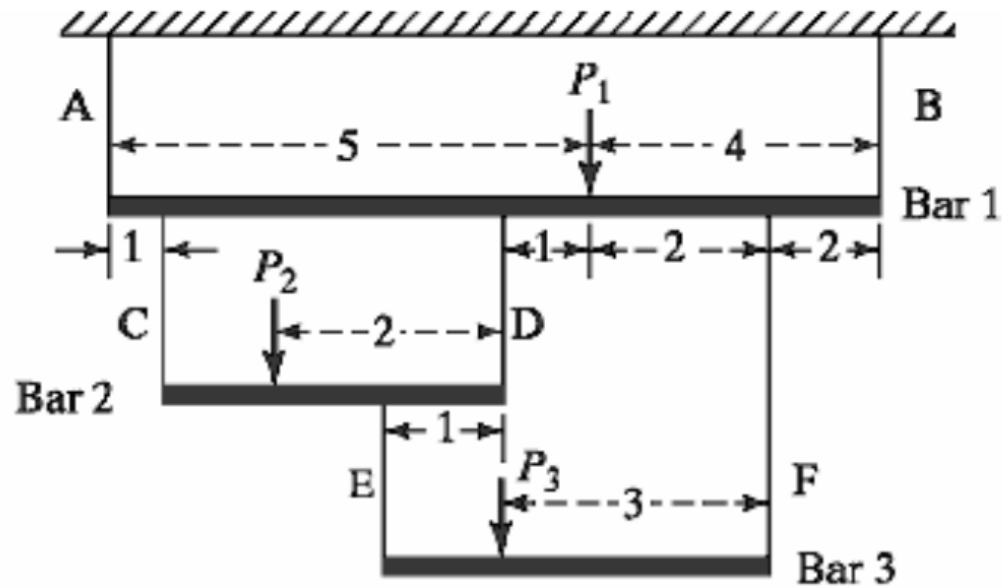
- The System in Matrix Form

$$\begin{pmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ & \cdot & & \\ & \cdot & & \\ a_{n1} & a_{n2} & \dots & a_{nn} \end{pmatrix} \times \begin{bmatrix} x_1 \\ x_2 \\ \cdot \\ \cdot \\ x_n \end{bmatrix} = \begin{bmatrix} b_1 \\ b_2 \\ \cdot \\ \cdot \\ b_n \end{bmatrix}$$

- A common mistake

- A Mechanical Engineering Example

As a group we are going to setup and solve a small statics problem.



– bar 1

– bar 2

– bar 3

- **A Mechanical Engineering Example (continued)**

- **REMINDER** - Homework 2 has been Posted.
- **REMINDER** - Homework 2 is due Wed. Feb. 8
- **REMINDER** - MATLAB script from today's lecture will be posted on ilearn.