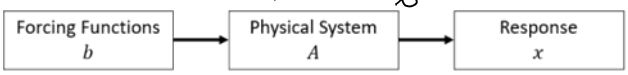
Linear Algebra

Wednesday, July 1, 2020 2:57 PM

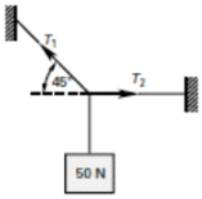
$Ax = b$: $\begin{bmatrix} & \end{bmatrix}\begin{bmatrix} \end{bmatrix} = \begin{bmatrix} \end{bmatrix}$

A x b



Solving a linear algebra problem:

1) Analyze the system holistically. What type of system are you analyzing (electrical, mechanical, structural, chemical, etc.)?
2) Apply the relevant engineering laws/first principles to obtain a series of equations.
3) Put the equations in $Ax = b$ form.
4) Solve by hand or in MATLAB.
5) Apply a series of test cases to check your results.



Force Balance in the *x* and *y* directions:

$\sum F_x = 0 \rightarrow T_1 \cos 45 - T_2 = 0$ (Eq. 1)

$\sum F_y = 0 \rightarrow T_1 \sin 45 - W = 0$ (Eq. 2)