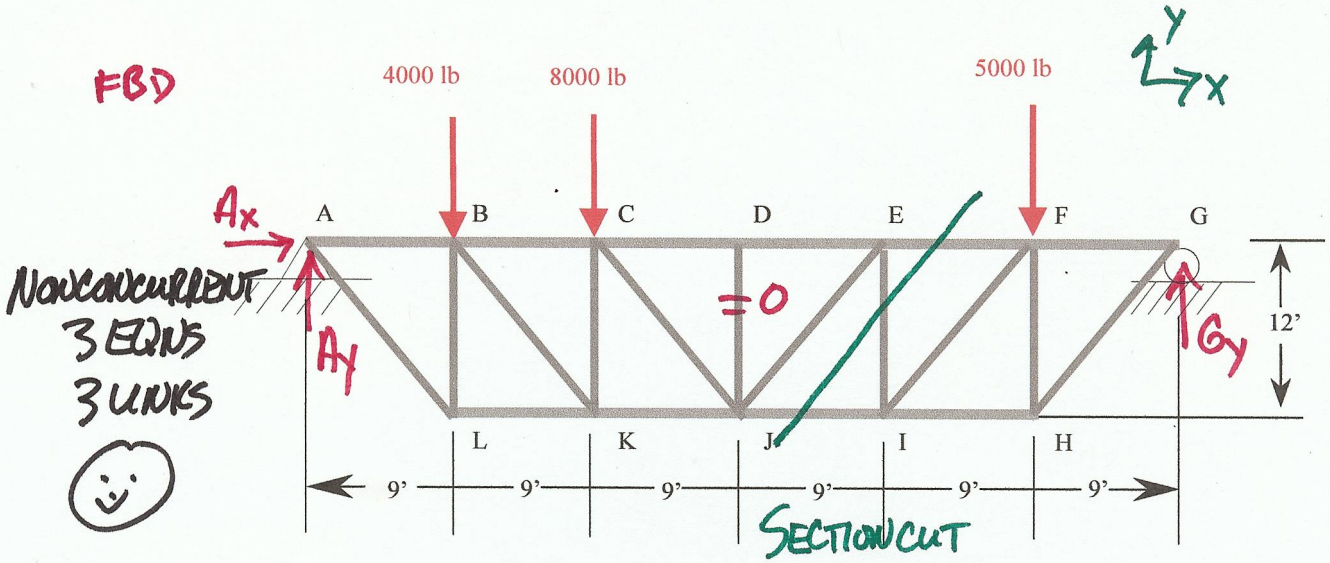
Worksheet 10

Problem 3 - Method of Sections and Zero Force Members in Trusses

Determine the internal forces in members EI, IJ and EF for the truss shown.



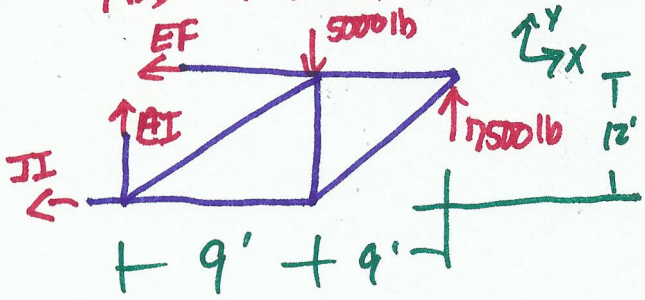
EXTERNAL

$\circlearrowleft \Sigma M_A = 0$

$9'(4000\,lb) + 18'(8000\,lb) + 45'(5000\,lb) - 54'G_y = 0$

$G_y = 7500\ lb \uparrow$

FBD OF RIGHT SIDE OF CUT



NONCONCURRENT
3 EQNS
3 UNKS

$\uparrow \Sigma F_y = 0$

$-5000 + EI + 7500 = 0$

$EI = -2500 = 2.5\ Kips\ (C)$

$\circlearrowleft \Sigma M_E = 0$

$12'JI + 9'(5000\,lb) - 18'(7500\,lb) = 0$

$JI = 7500 = 7.5\ Kips\ (T)$

$\rightarrow \Sigma F_x = 0$

$-JI - EF = 0$

$EF = -7500 = 7.5\ Kips\ (C)$