



UNIVERSIDADE ESTADUAL DO PIAUÍ – UESPI

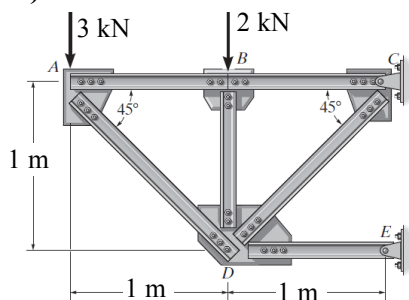
CENTRO DE TECNOLOGIA E URBANISMO - CTU

CURSO DE ENGENHARIA CIVIL

MECÂNICA GERAL – Lista de Exercícios nº 5 – Prof. Fernando Jufat

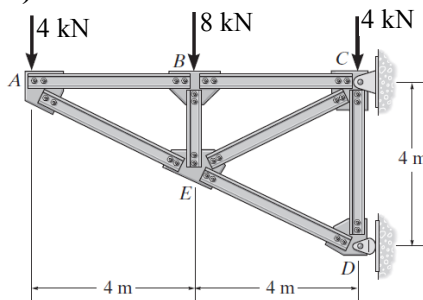
Determine os esforços em todas as barras das treliças das questões 1 a 7. Considere cada nó como um pino sem atrito, mesmo quando a ligação não é totalmente articulada como nos problemas 1 e 2.

1) Hibbeler 6.2



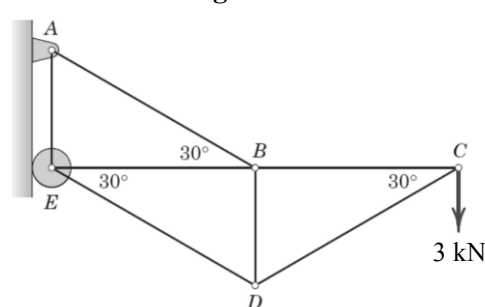
$$R. AB = +3; AD = 4,243; DC = +7,07$$

2) Hibbeler 6.4



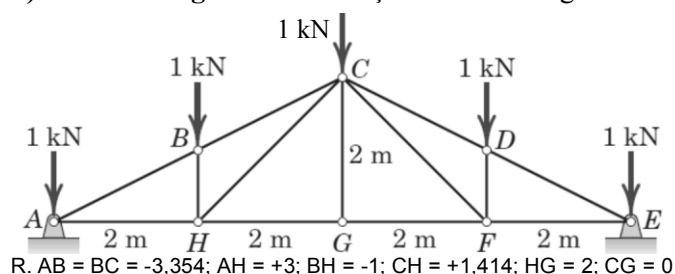
$$R. AB=BC = -8; AE = +8,944; BE = -8 \text{ kN}$$

3) Meriam & Kraige 4/9



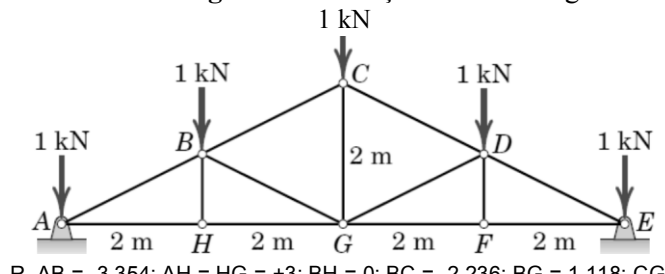
$$R. AB = +12; AE = -3; BC = +5,196; BD = +6; CD = -6$$

4) M. & Kraige 4/21 – Treliça PRATT triangular



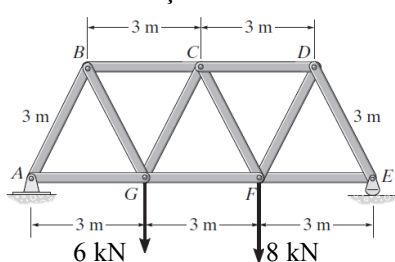
$$R. AB = BC = -3,354; AH = +3; BH = -1; CH = +1,414; HG = 2; CG = 0$$

5) Meriam & Kraige 4/20 – Treliça HOWE triangular



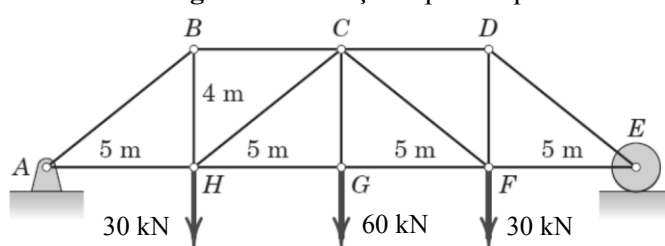
$$R. AB = -3,354; AH = HG = +3; BH = 0; BC = -2,236; BG = 1,118; CG = +1$$

6) Hibbeler 6.36 – Treliça Warren



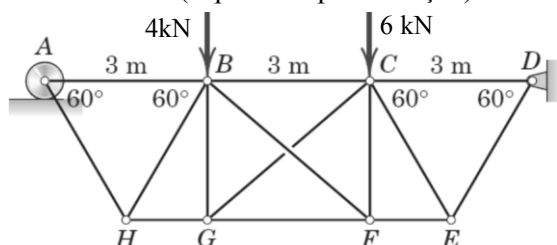
$$R. BC = -7,698; GF = 8,08 \text{ kN}; CG = -0,77; DE = 8,468; EF = 4,234$$

7) Meriam & Kraige 4/7 – Treliça de ponte tipo HOWE



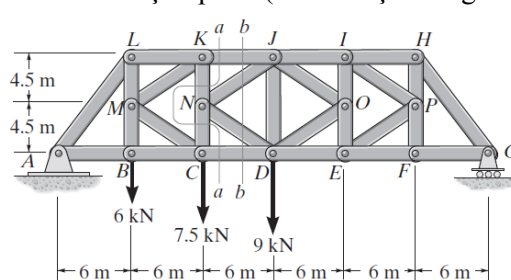
$$R. AB = -96,05; AH = +75; BH = +60; BC = -75; CH = -48,02; HG = +112,5$$

8) Meriam & Kraige 4/19 – Determine as forças nas barras AB, BH, BF, BG e CG. OBS. os membros BF e CG são cabos (suportam apenas tração).



$$R. AB = -4,694; BH = -5,389; BF = +1,018; BG = 0; CG = 0$$

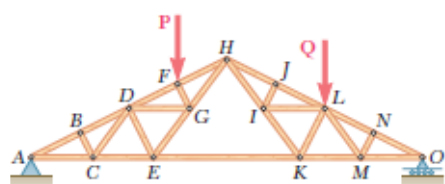
9) Hibbeler 6.52 – Determine as forças nas barras JK, JN, DN e CD da treliça tipo K (use as seções sugeridas na figura).



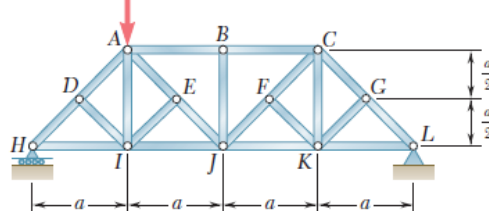
$$R. JK = -15,33; JN = -0,8333; DN = +0,8333; CD = +15,33 \text{ kN}$$

Indique as barras com esforço nulo nas treliças a seguir:

10) Beer 6.30 – Treliça Fink



11) Beer 6.31 – Treliça Baltimore



12) Beer 6.33

