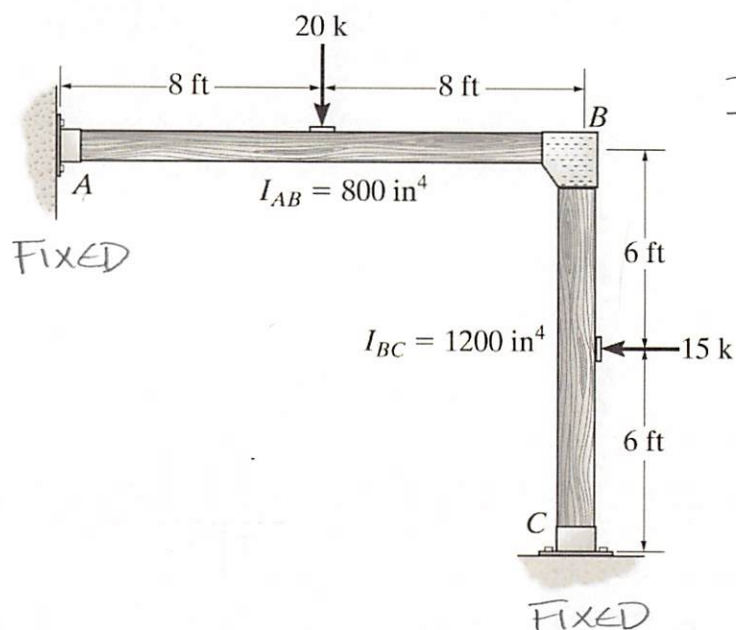


11b-2 – Determine the moments at the supports, then draw the moment diagram. The members are fixed connected at the supports and joint B. The moment of inertia of each member is given in the figure. Take $E = 29(10^3)$ ksi.



$$I_{BC} = \frac{3}{2} I_{AB}$$

$$FEM_{AB} = \frac{PL}{8} = \frac{20k(16')}{8} = \pm 40kft$$

$$FEM_{BC} = \frac{PL}{8} = \frac{15k(12')}{8} = \pm 22.5kft$$

$$DF_{AB} = DF_{CB} = 0$$

$$K_{BA} = \frac{4EI_{AB}}{L_{AB}} = \frac{4EI_{AB}}{16'} = \frac{1}{4}$$

$$K_{BC} = \frac{4EI_{BC}}{L_{BC}} = \frac{4E(\frac{3}{2}I_{AB})}{12'} = \frac{1}{2}$$

$$DF_{BA} = \frac{K_{BA}}{K_{BA} + K_{BC}} = \frac{\frac{1}{4}}{\frac{1}{4} + \frac{1}{2}} = \frac{1}{3}$$

$$DF_{BC} = \frac{2}{3}$$

JOINT	A	B		C
MEMBER	AB	BA	BC	CB
DF	0	1/3	2/3	0
FEM	-40	40	-22.5	22.5
DIST.		-5.833	-11.667	
CO	-2.917			-5.833
DIST.				
Σ	42.92	34.17	-34.17	16.67