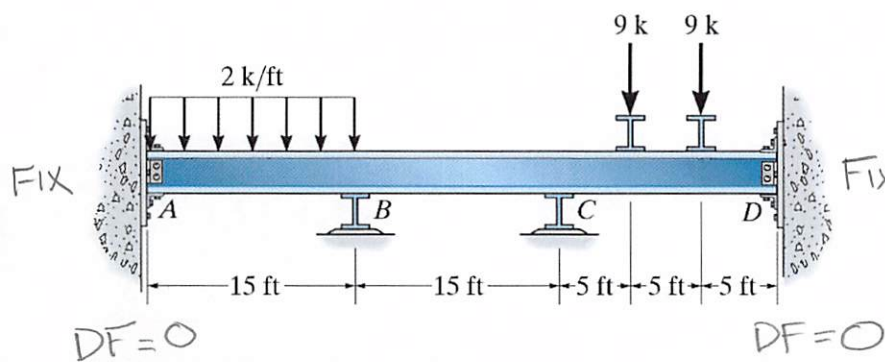


Problem 11a-2 – Determine the moments at A, B, C, and D. Assume the supports at A and D are fixed and B and C are rollers. EI is constant.

1/2



$$FEM_{AB} = \frac{WL^2}{12} = \frac{2k/ft(15')^2}{12} = \pm 37.5 kft$$

$$FEM_{CD} = \frac{2PL}{9} = \frac{2(9k)(15')}{9} = \pm 30 kft$$

$$K_{BA} = \frac{4EI}{L} = \frac{4EI}{15'}$$

$$K_{BC} = \frac{4EI}{15'}$$

$$K_{CB} = \frac{4EI}{15'} \quad K_{CD} = \frac{4EI}{15'}$$

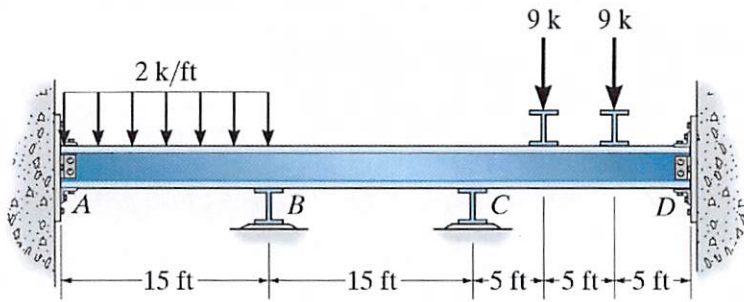
$$DF_{BA} = \frac{K_{BA}}{K_{BA} + K_{BC}} = \frac{4/15}{4/15 + 4/15} = 0.5$$

$$DF_{BC} = \frac{K_{BC}}{K_{BA} + K_{BC}} = \frac{4/15}{4/15 + 4/15} = 0.5$$

$$D_{CB} = \frac{K_{CB}}{K_{CB} + K_{CD}} = \frac{4/15}{4/15 + 4/15} = 0.5$$

$$D_{CD} = 0.5$$

Problem 11a-2 –Determine the moments at A, B, C, and D. Assume the supports at A and D are fixed and B and C are rollers. EI is constant.



Joint	A	B		C		D
Member	AB	BA	BC	CB	CD	DC
DF	0	0.5	0.5	0.5	0.5	0
FEM	-37.5	37.5			-30	30
Dist.		-18.75	-18.75	15	15	
CO	-9.375		7.5	-9.375		7.5
Dist.		-3.75	-3.75	4.6875	4.6875	
CO	-1.875		2.34	-1.875		2.34
Dist.		-1.17	-1.17	0.94	0.94	
CO	-0.59		0.47	-0.59		0.47
Dist.		-0.23	-0.23	0.29	0.29	
CO	-0.12		0.15	-0.12		0.15
Dist.		-0.07	-0.07	0.06	0.06	

$$\sum \begin{array}{c|c|c|c|c|c} -45.71 & 13.53 & -13.51 & 9.01 & -9.02 & 40.46 \end{array}$$