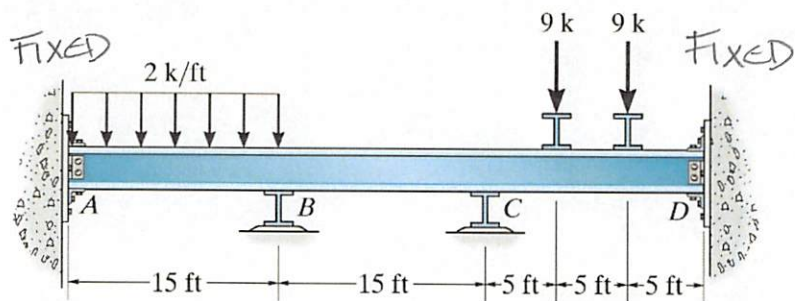


Problem 11a-2 –Determine the moments at A, B, C, and D. Assume the supports at A and D are fixed and B and C are rollers. EI is constant.



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

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

$$DF_{AB} = DF_{DC} = 0 \text{ (FIXED END)}$$

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

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

$$DF_{BA} = \frac{K_{BA}}{K_{BA} + K_{BC}} = \frac{4/15}{4/15 + 4/15} = \frac{1}{2}$$

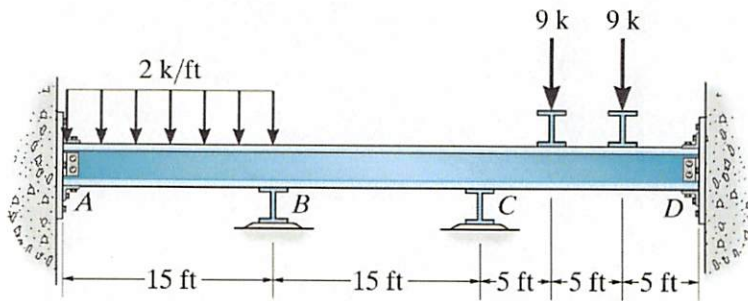
$$DF_{BC} = \frac{K_{BC}}{K_{BA} + K_{BC}} = \frac{4/15}{4/15 + 4/15} = \frac{1}{2}$$

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

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

$$\Rightarrow DF_{CB} = DF_{CD} = \frac{1}{2}$$

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	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	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	4.688	4.688	
CO	-1.875		2.344	-1.875		2.344
Dist.		-1.172	-1.172	0.938	0.938	
CO	-0.586		0.469	-0.586		0.469
Dist.		-0.235	-0.235	0.293	0.293	
CO	-0.118		0.147	-0.118		0.147
Dist.		-0.073	-0.073	0.059	0.059	

$$\sum \quad \underline{\underline{49.45 \quad -13.52 \quad -13.52 \quad 9.02 \quad -9.02 \quad 40.46 \quad (kft)}}$$