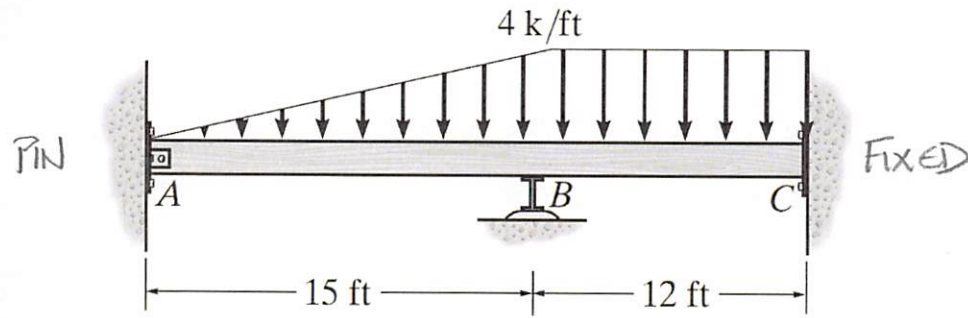


Problem 11a-1 – Determine the moment at B . Assume the support at A is pinned, B is a roller, C is fixed, and EI is constant.



$$FEM_{BA} = \frac{WL^2}{15} = \frac{4 \text{ k/ft} (15 \text{ ft})^2}{15} = \underline{60 \text{ kft}}$$

$$FEM_{AB} = \pm \frac{WL^2}{12} = \frac{4 \text{ k/ft} (12 \text{ ft})^2}{12} = \underline{\pm 48 \text{ kft}}$$

STIFFNESSES

$$K_{BA} = \frac{3EI}{L_{AB}} = \frac{3EI}{15 \text{ ft}}$$

$$K_{BC} = \frac{4EI}{L_{BC}} = \frac{4EI}{12 \text{ ft}}$$

PIN $DF_{AB} = 1$

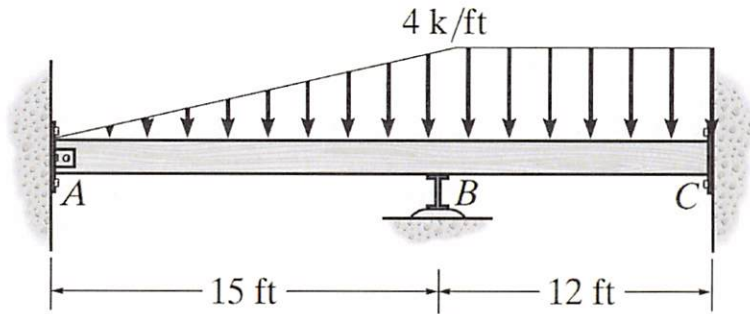
$$DF_{BA} = \frac{K_{BA}}{K_{BA} + K_{BC}} = \frac{3/15}{3/15 + 4/12} = 0.375$$

FIXED $DF_{CB} = 0$

$$DF_{BC} = \frac{K_{BC}}{K_{BA} + K_{BC}} = \frac{4/12}{3/15 + 4/12} = 0.625$$

$$\sum DF_B = 1$$

Problem 11a-1 – Determine the moment at B . Assume the support at A is pinned, B is a roller, C is fixed, and EI is constant.



Joint	A	B		C
Member	AB	BA	BC	CB
DF	1	0.375	0.625	0
FEM	0	60	-48	48
Dist.		-4.5	-7.5	
CO				-3.75
Dist.				
CO				
Dist.				

$$\sum_i \quad 0 \quad 55.5 \quad -55.5 \quad 44.25 \quad (\text{kft})$$