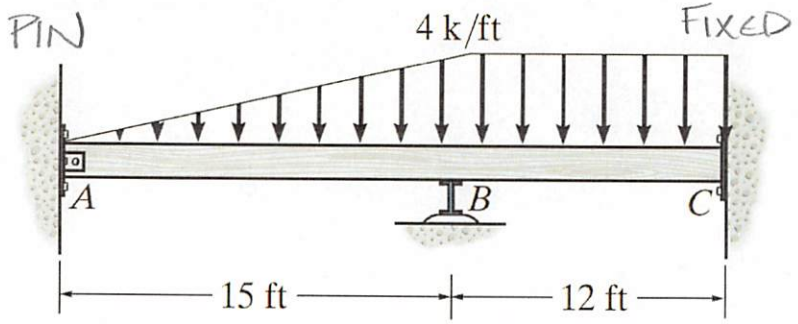
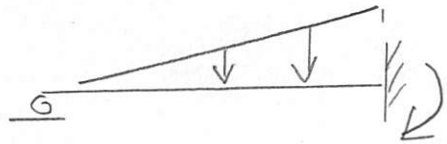
Problem 11a-1 – Determine the moment at *B*. Assume the support at *A* is pinned, *B* is a roller, *C* is fixed, and *EI* is constant.



FEM_{AB}  $\frac{WL^2}{15} = \frac{4k/ft(15ft)^2}{15}$

$= 60 k\,ft$

FEM_{BC} $\frac{WL^2}{12} = \frac{4k/ft(12ft)^2}{12}$

$= \pm 48 k\,ft$

STIFFNESS

$K_{BA} = \frac{3EI}{L_{AB}} = \frac{3EI}{15'}$ $\quad K_{BC} = \frac{4EI}{L_{BC}} = \frac{4EI}{12'}$

PIN

$DF_{AB} = 1$

$DF_{CB} = 0$

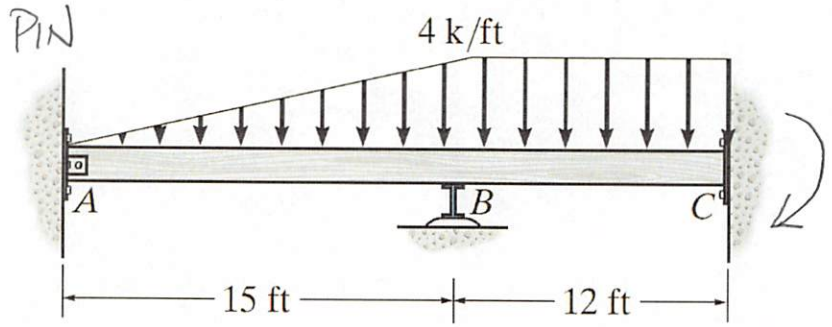
FIXED

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

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

$\sum DF = 1$ ✓

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.



44.25kft

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.				
$\sum$		55.5	-55.5	44.25 (kft)