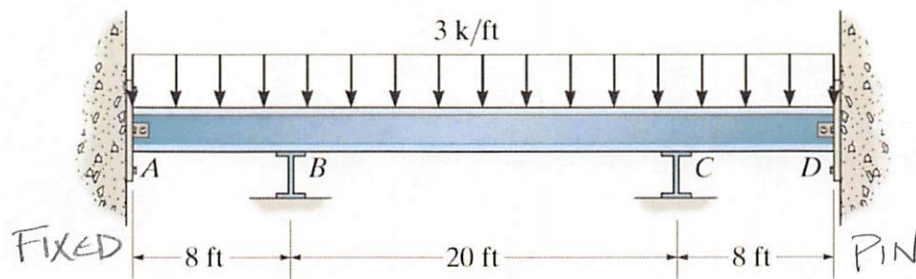


Determine the moments at points B and C, given that EI is a constant. Assume B and C are rollers, A is a fixed support, and D is a pin.



$$FEM_{AB} = \frac{WL^2}{12}$$

$$= \frac{3 \text{ k/ft} (8 \text{ ft})^2}{12} = \pm 16 \text{ kft}$$

$$FEM_{BC} = \frac{3 \text{ k/ft} (20 \text{ ft})^2}{12}$$

$$= \pm 100 \text{ kft}$$

$$FEM_{CD} = \frac{-WL^2}{8} = \frac{-3 \text{ k/ft} (8 \text{ ft})^2}{8}$$

$$= -24 \text{ kft}$$

$$DF_{AB} = 0 \quad DF_{DC} = 0$$

$$K_{BA} = \frac{4EI}{8}$$

$$K_{BC} = \frac{4EI}{20}$$

$$DF_{BA} = \frac{K_{BA}}{K_{BA} + K_{BC}} = \frac{1/2}{1/2 + 1/5} = 0.714$$

$$DF_{BC} = 0.286$$

$$K_{CB} = \frac{4EI}{20}$$

$$K_{CD} = \frac{3EI}{8}$$

$$DF_{CB} = \frac{K_{CB}}{K_{CB} + K_{CD}} = \frac{1/5}{1/5 + 3/8} = 0.348$$

$$DF_{CD} = 0.652$$

Joint	AB	B		C		D
Members	AB	BA	BC	CB	CD	DC
DF	0	0.714	0.286	0.348	0.652	1
FEM	-16.00	16.00	-100.00	100.00	-24.00	
Dist.		60.00	24.00	-26.43	-49.57	
CO	30.00		-13.22	12.00		
Dist.		9.44	3.78	-4.17	-7.83	
CO	4.72		-2.09	1.89		
Dist.		1.49	0.60	-0.66	-1.23	
CO	0.75		-0.33	0.30		
Dist.		0.23	0.09	-0.10	-0.19	
CO	0.12		-0.05	0.05		
Dist.		0.04	0.01	-0.02	-0.03	
CO	0.02		-0.01	0.01		
Dist.		0.01	0.00	0.00	0.00	
Sum	19.60	87.21	-87.21	82.85	-82.85	0.00