

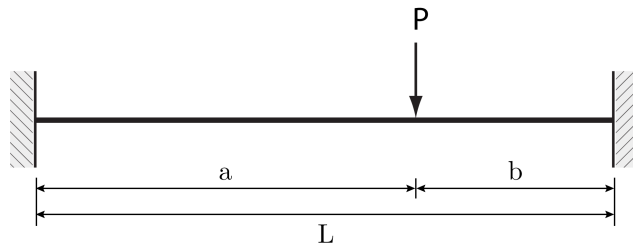
**CE 325 Spring 2026 HW#7**  
Due Thursday, April 09 by 1:30 pm ET

1. (10 pts) Derive the 4<sup>th</sup> column of the 4x4 beam element stiffness matrix [k]:

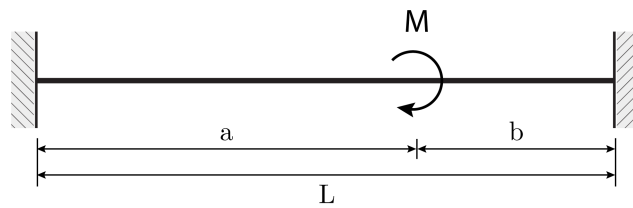
$$[k] = \frac{EI}{L^3} \begin{bmatrix} 12 & 6L & -12 & 6L \\ 6L & 4L^2 & -6L & 2L^2 \\ -12 & -6L & 12 & -6L \\ 6L & 2L^2 & -6L & 4L^2 \end{bmatrix}$$

2. Derive the fixed end forces/moments for the following beam loading cases:

a. (5 pts)



b. (5 pts)



c. (5 pts)

