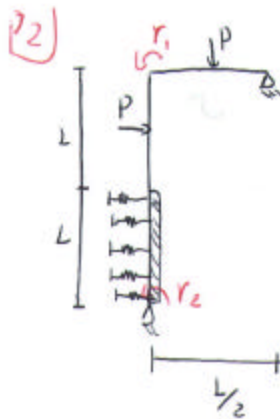


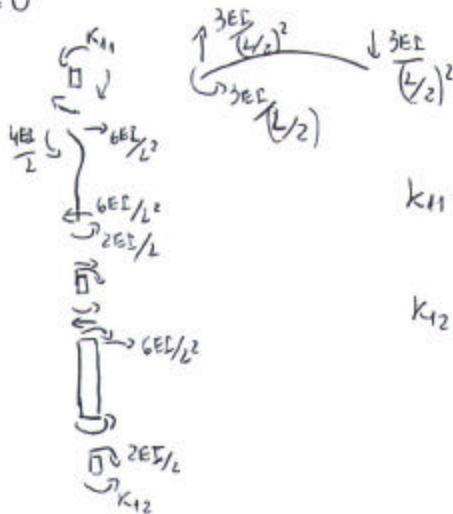
# Parte Control 3 P2



$$K = \frac{12EI}{L^3}$$

$$K_{in} [F/L/L]$$

$$r_1 = 1 \quad r_2 = 0$$



$$K_{11} = \frac{6EI}{L} + \frac{4EI}{L} = \frac{10EI}{L}$$

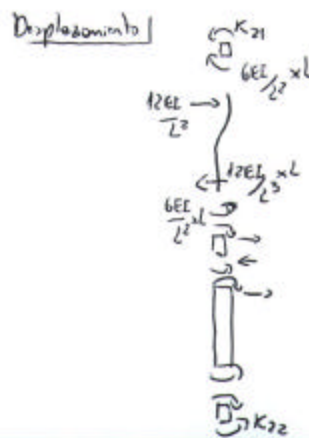
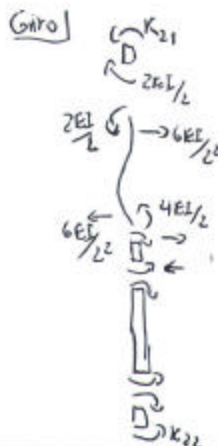
$$K_{12} = \frac{2EI}{L} + \frac{6EI}{L^2} \cdot L = \frac{8EI}{L}$$

Corte en la barra  
flexible que pose como  
momento al extremo barra rigida

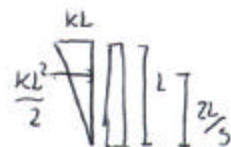
$$r_1 = 0 ; r_2 = 1$$



El giro en la barra inf. rigida produce un giro y un desplazamiento en la barra flexible



Corte

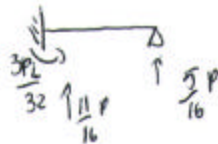
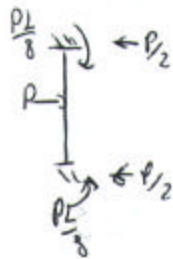


$$K_{22} = \underbrace{\frac{4EI}{L} + \frac{6EI}{L^2} \times L}_{\times \text{Giro}} + \underbrace{\frac{6EI}{L^2} \times L + \frac{12EI}{L^3} \times L \times L}_{\times \text{Desplazamiento}} + \frac{KL^2}{2} \times \frac{2L}{3} = 32 \frac{EI}{L}$$

$$K_{21} = \frac{2EI}{L} + \frac{6EI}{L^2} \times L = \frac{8EI}{L}$$

$$K = \frac{EI}{L} \begin{bmatrix} 10 & 8 \\ 8 & 32 \end{bmatrix} \rightarrow K^{-1} = \frac{L}{EI} \begin{bmatrix} \frac{1}{8} & -\frac{1}{32} \\ -\frac{1}{32} & \frac{5}{128} \end{bmatrix} = \frac{L}{EI} \begin{bmatrix} 0,125 & -0,031 \\ -0,031 & 0,039 \end{bmatrix}$$

Vector de Cargas nodales



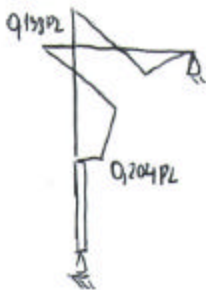
$$R_1 = \frac{PL}{8} - \frac{3}{32} PL = \frac{PL}{32}$$

$$R_2 = -\frac{PL}{8} - \frac{PL}{2} = -\frac{5PL}{8}$$

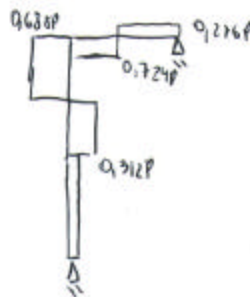
$$\Rightarrow \{R\} = [K] \{r\} \Rightarrow \begin{Bmatrix} r_1 \\ r_2 \end{Bmatrix} = \frac{L}{EI} \begin{bmatrix} 0,125 & -0,031 \\ -0,031 & 0,039 \end{bmatrix} \begin{Bmatrix} \frac{1}{32} \\ -\frac{5}{8} \end{Bmatrix} PL$$

$$\begin{Bmatrix} r_1 \\ r_2 \end{Bmatrix} = \frac{PL^2}{EI} \begin{Bmatrix} 0,025 \\ -0,025 \end{Bmatrix}$$

Momento



Carth



Def

