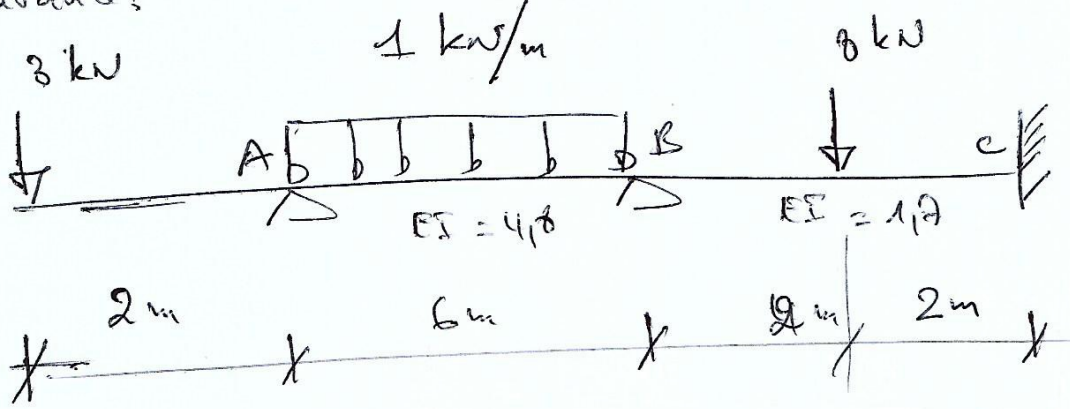
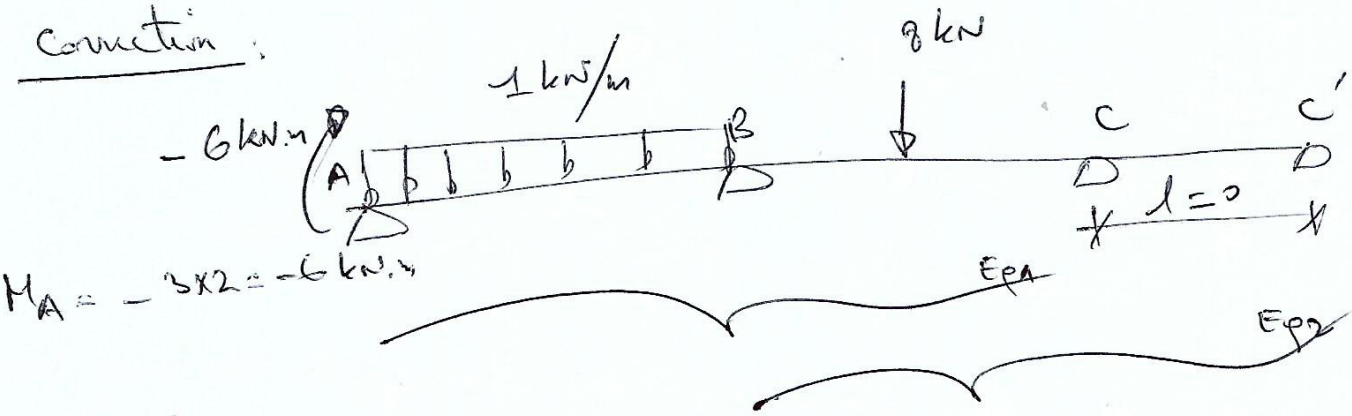
T. D

Analyser par la méthode de 3 moments la poutre continue suivante :



Correction :



$M_A = -3 \times 2 = -6$ kN.m

Eq (1) : A, B, C

$$\alpha = \frac{1,7}{4,8} = 0,35$$

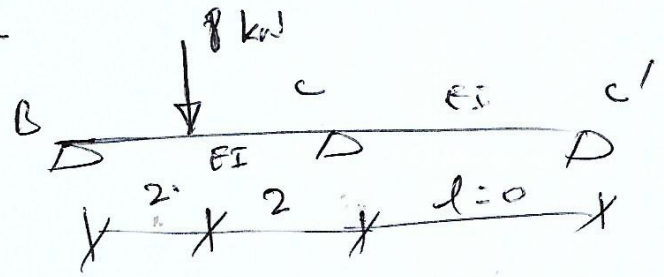
$$(\theta_B^0)_d = -\frac{Pl^2}{16EI} \simeq -\frac{23}{EI}$$

$$(\theta_B)_g = \frac{Pl^3}{24EI} = \frac{9}{EI}$$

$$\Rightarrow 6M_A + 2\left(6 + \frac{4}{0,35}\right)M_B + \frac{4}{0,35}M_C = 6EI\left(-\frac{23}{EI} - \frac{9}{EI}\right)$$

$$\Rightarrow 34M_B + 11M_C = -156 \quad (Ep1)$$

Eq(2)



Eq2 B , C , C'

$\alpha = 1$

$$(\theta_C^0)_1 = 0$$

$$(\theta_C^0)_8 = \frac{Pl^2}{16EI} = \frac{8 \times 16}{16EI} = \frac{8}{EI}$$

$$\Rightarrow 4M_B + 2(4+0)M_C = 6EI\left(0 - \frac{8}{EI}\right)$$

$$\Rightarrow \begin{cases} 4M_B + 8M_C = -48 \\ 34M_B + 11M_C = -156 \end{cases} \Rightarrow \begin{matrix} M_B \simeq -3,16 \text{ kN.m} \\ M_C \simeq -4,42 \text{ kN.m} \end{matrix}$$

N.B on utilise l'equation d'un travée qq. d'une poutre continue pour determiner les efforts interieurs M_z et T_y

Diagramme de M_z [kN.m]