

Solution :
Facteurs de répartition

$$K_{12} = K_{21} = \frac{4(2EI)}{6} = \frac{4EI}{3}$$

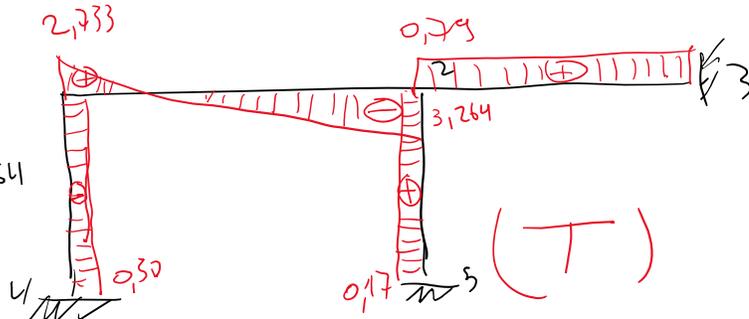
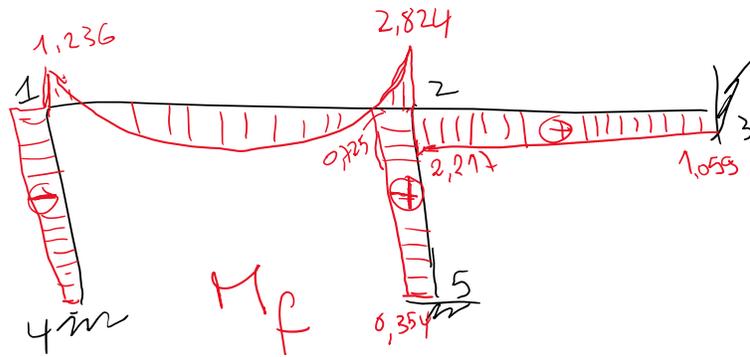
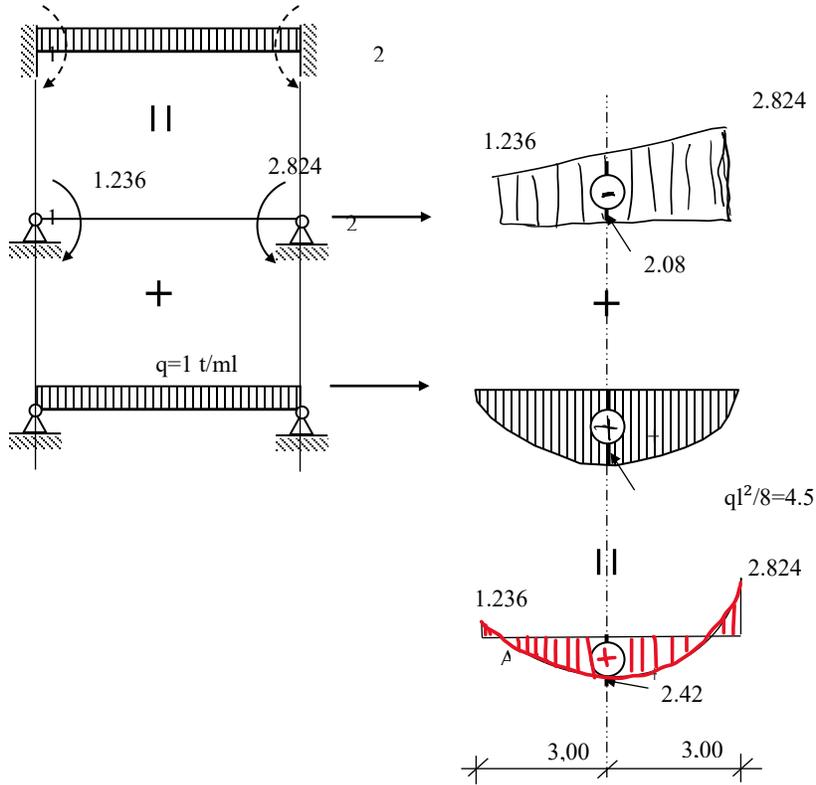
$$K_{32} = K_{23} = \frac{4(2EI)}{4} = 2EI$$

$$K_{14} = K_{41} = K_{25} = K_{52} = \frac{4(EI)}{6} = \frac{2EI}{3}$$

$$C_{14} = \frac{2/3}{4/3 + 2/3} = \frac{2}{6} = 0,333 \quad C_{12} = \frac{4/3}{4/3 + 2/3} = \frac{8}{10} = 0,667, \text{ et } C_{14} + C_{12} = 1$$

$$C_{23} = \frac{2}{4/3 + 2/3 + 2} = \frac{6}{12} = 0,5, \quad C_{21} = \frac{4/3}{4/3 + 2/3 + 2} = \frac{4}{16} = 0,333, \quad C_{25} = \frac{2/3}{4/3 + 2/3 + 2} = \frac{2}{16} = 0,167$$

| Noeud (ou appui) | | 4 | 1 | | 2 | | | 3 | 5 |
|-----------------------------------|---|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Barre (ou extrémité) | | 41 | 14 | 12 | 21 | 25 | 23 | 32 | 52 |
| Coef. de répartition $x (-)$ | | | -0,333 | -0,667 | -0,333 | -0,167 | -0,5 | | |
| Mot. | | \bar{M}_{41} | \bar{M}_{41} | \bar{M}_{12} | \bar{M}_{21} | \bar{M}_{25} | \bar{M}_{23} | \bar{M}_{32} | \bar{M}_{52} |
| No eu d | Moment de libération | 0.0 | 00 | 3.0 | -3.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 1 | $M_1^{(1)} = \bar{M}_{14} + \bar{M}_{12} = 3.0$ | -0.5 | -1 | -2 | -1 | | | | |
| 2 | $M_2^{(1)} = \bar{M}_{21} + \bar{M}_{25} + \bar{M}_{23} = -4$ | | | 0.666 | 1.332 | 0.668 | 2 | 1 | 0.334 |
| 1 | $M_1^{(2)} = \bar{M}_{14} + \bar{M}_{12} = 0.666$ | -0.111 | -0.222 | -0.444 | -0.222 | | | | |
| 2 | $M_2^{(2)} = \bar{M}_{21} + \bar{M}_{25} + \bar{M}_{23} = -0.222$ | | | 0.037 | 0.074 | 0.037 | 0.111 | 0.056 | 0.019 |
| 1 | $M_1^{(3)} = \bar{M}_{14} + \bar{M}_{12} = 0.037$ | -0.006 | -0.012 | -0.025 | -0.012 | | | | |
| 2 | $M_2^{(3)} = \bar{M}_{21} + \bar{M}_{25} + \bar{M}_{23} = -0.012$ | | | 0.002 | 0.004 | 0.002 | 0.006 | 0.003 | 0.001 |
| Moments aux extrémités des barres | | -0.617 | -1.234 | 1.236 | -2.824 | 0.725 | 2.117 | 1.059 | 0.354 |



$$T_{12} = 3 + \frac{1,236 - 2,824}{6} = 2,733 \text{ t}$$

$$T_{21} = -3 + \frac{1,236 - 2,824}{6} = -3,264$$

$$T_{14} = -0,30$$

$$T_{41} = 0,30$$

$$T_{25} = T_{52} = 0,17$$

$$T_{23} = T_{32} = 0,79$$