مثال : تیر شکل زیر را تحت بارهای وارده و نشست تکیه‌گاه‌ها تحلیل کنید.

$$E = 2 \times 10^6 \text{ kg/cm}^2, \qquad I = 3000 \text{ cm}^4$$

FEM ناشی از بار خارجی :
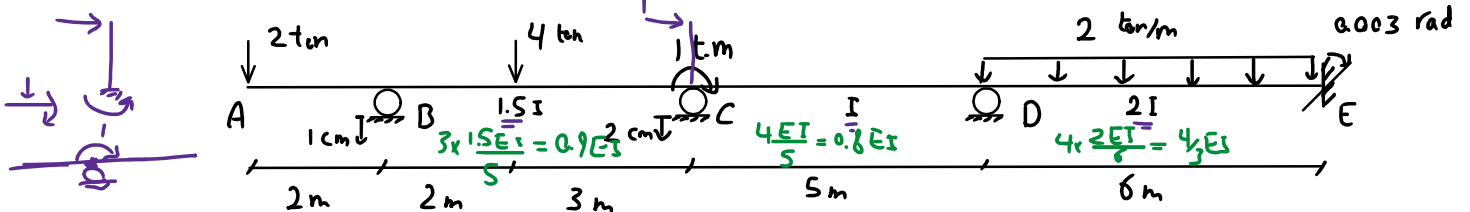
$$M_{BA} = 4 \ t \cdot m$$

$$FEM_{DE} = -FEM_{ED} = -\frac{2 \times 6^2}{12} = -6$$

$$FEM_{BC} = -\frac{4 \times 2 \times 3^2}{5^2} = -2.88 \qquad FEM_{CB} = \frac{4 \times 3 \times 2^2}{5^2} = 1.92$$
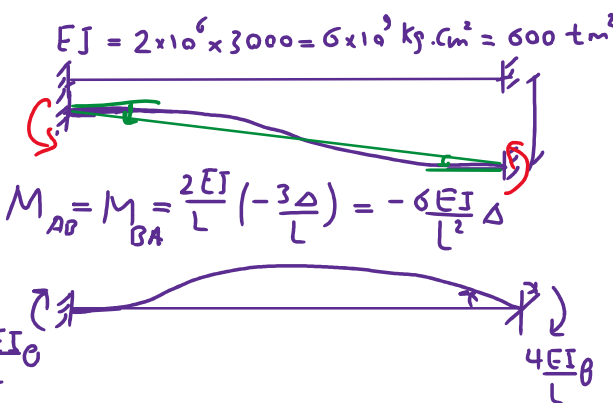
FEM ناشی از نشست :

$$FEM_{BC} = FEM_{CB} = -6 \frac{EI}{l^2} \Delta = -6 \frac{1.5 \times 600}{5^2} \times 0.01 = -2.16 \ t \cdot m$$

$$FEM_{CD} = FEM_{DC} = 6 \times \frac{600}{5^2} \times 0.02 = 2.88 \ t \cdot m$$

$$FEM_{DE} = \frac{2EI}{l}\theta = 2 \times \frac{2 \times 600}{6} \times 0.003 = 1.2 \ t \cdot m$$

$$FEM_{ED} = \frac{4EI}{l}\theta = 2.4 \ t \cdot m$$

$$EI = 2 \times 10^6 \times 3000 = 6 \times 10^9 \ kg \cdot cm^2 = 600 \ t \cdot m^2$$

$$M_{AB} = M_{BA} = \frac{2EI}{l}\left(-\frac{3\Delta}{l}\right) = -6\frac{EI}{l^2}\Delta$$

$$\frac{2EI}{l}\theta \qquad\qquad \frac{4EI}{l}\theta$$

FEM کل ناشی از بار و نشست :

$$FEM_{BA} = 4 \qquad\qquad FEM_{CD} = FEM_{DC} = 2.88$$

$$FEM_{BC} = -2.88 - 2.16 = -5.04 \qquad FEM_{DE} = -6 + 1.2 = -4.8$$

$$FEM_{CB} = 1.92 - 2.16 = -0.24 \qquad FEM_{ED} = 6 + 2.4 = 8.4$$

ضریب توزیع :

$$DF_{CB} = \frac{0.9}{0.9 + 0.8} = 0.529 \qquad\qquad DF_{DC} = \frac{0.8}{0.8 + \frac{4}{3}} = 0.375$$

$$DF_{CD} = 1 - DF_{CB} = 0.471 \qquad\qquad DF_{DE} = 0.625$$

B		0.529	C	0.471		0.375	D	0.625		E
4	−5.04	−0.24	2.88		2.88	−4.8				8.4
	1.04 →	0.52								
		−1.143	−1.017 →	−0.509						
			0.456 ←	0.911	1.518			→		0.759
		−0.241	−0.215 →	−0.108						
			0.02 ←	0.04	0.068			→		0.034
4	−4	−1.10	2.12		3.21	−3.21				9.19

0.02   ←   0.04 | 0.068   →   0.034

| 4 | −4 | | −1.10 | 2.12 | 3.21 | −3.21 | 9.19 |

−1.11   2.11

0.529 | C | 0.471   0.375 | D | 0.625

4   −5.04   −0.24 ⊝ 2.88   2.88   −4.8   8.4

1.04   →   0.52

−1.143 | −1.017   0.72   1.2

0.36   −0.509   0.6

−0.19 | −0.17   0.191 | 0.318

0.096   −0.085   0.159

−0.051 | −0.045   0.032 | 0.053

0.016   −0.023   0.027

| 4 | −4 | | −1.10 | 2.12 | 3.21 | −3.23 | 9.19 |