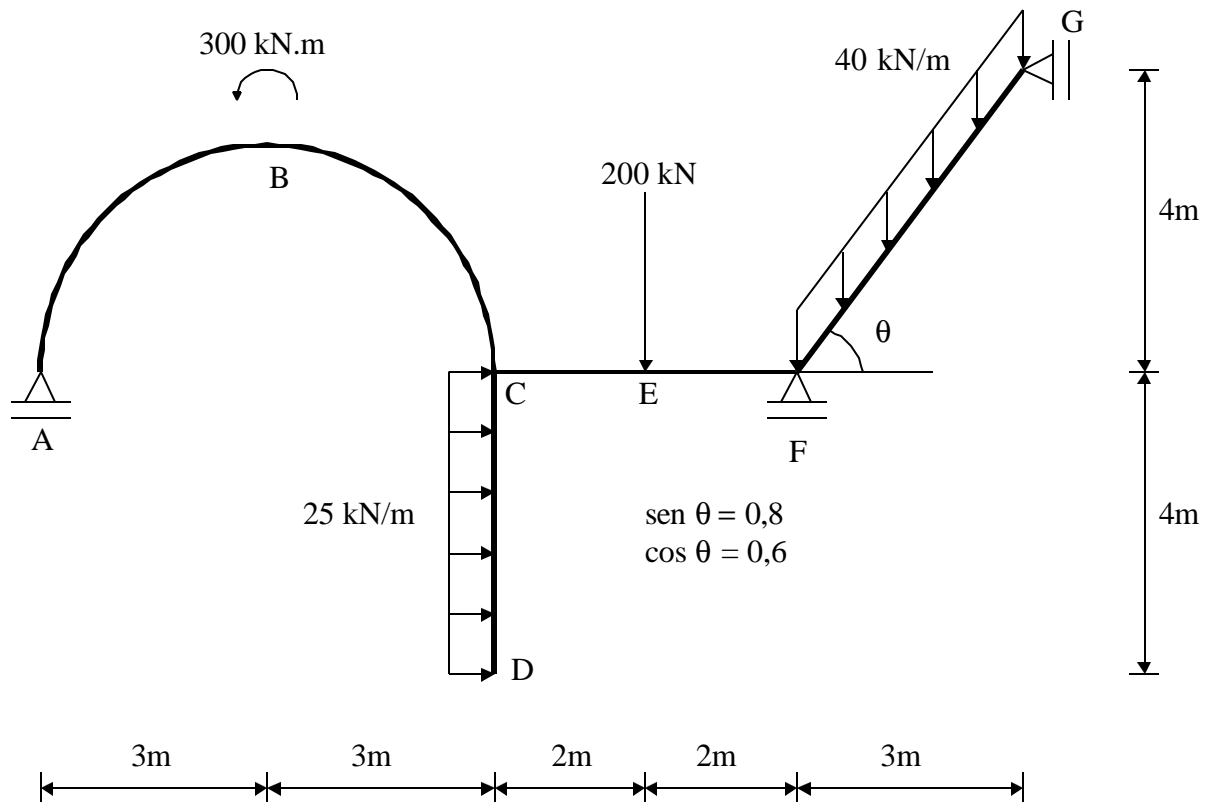
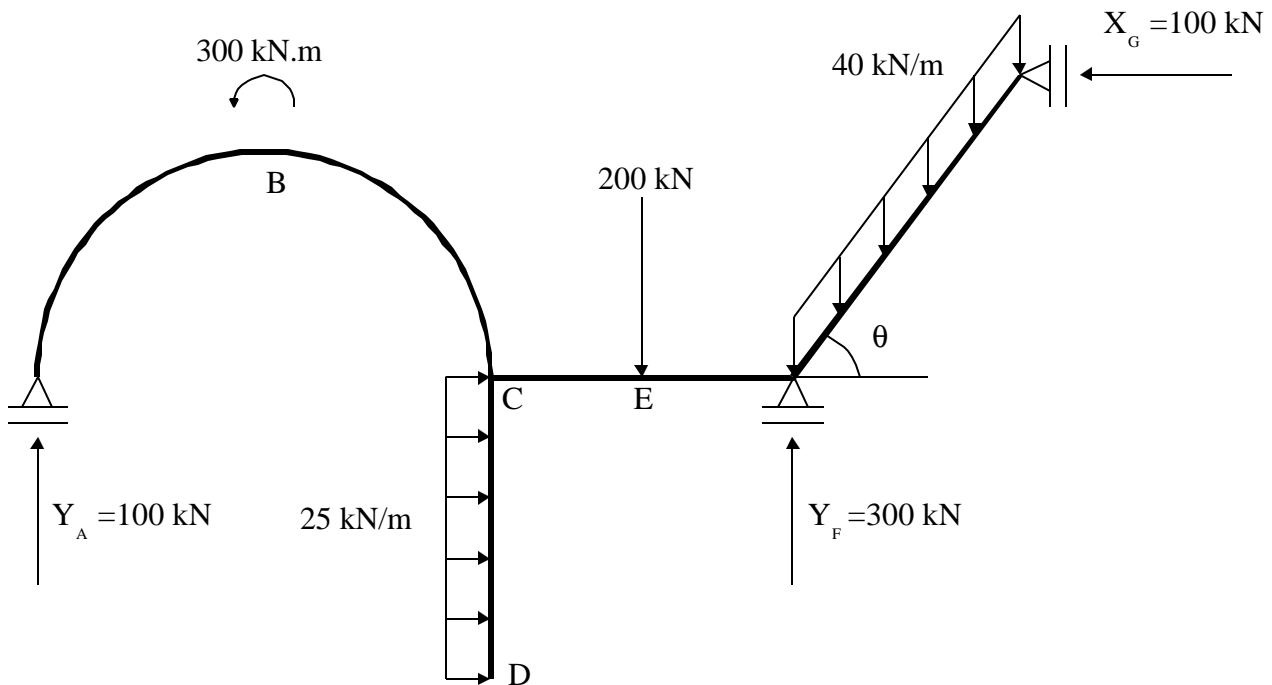


1ª QUESTÃO – 1ª PROVA DE 1997

Traçar os diagramas de esforços solicitantes dos trechos *BCD* e *CEFG* da estrutura da figura.



Resolução:



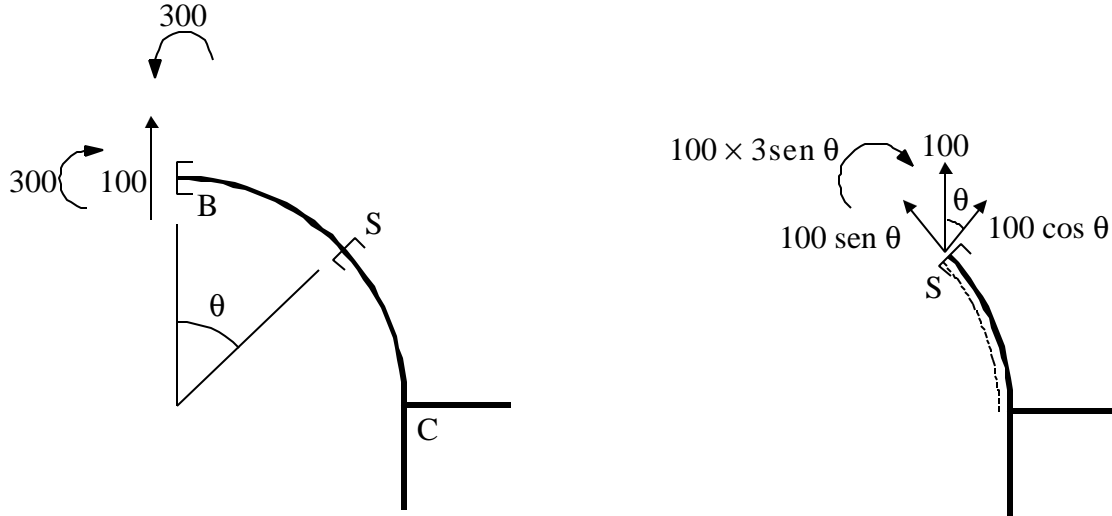
$$\sum X = 0 \quad \text{P} \quad 25 \cdot 4 - X_G = 0 \quad \text{P} \quad X_G = 100 \text{ kN}$$

$$\sum Y = 0 \quad \text{P} \quad Y_A - 200 + Y_F - 40 \cdot 5 = 0$$

$$\sum M_F = 0 \quad \text{P} \quad 300 + 25 \cdot 4 \cdot 2 - 200 \cdot 8 + Y_F \cdot 10 - 40 \cdot 5 \cdot 11,5 + 100 \cdot 4 = 0$$

$$\setminus Y_F = 300 \text{ kN} \quad \text{e} \quad Y_A = 200 + 200 - 300 = 100 \text{ kN}$$

Esforços Solicitantes em BC:



entre B e C

$$N = 100 \text{ sen } \theta \quad \text{P} \quad N(0) = 0$$

$$N(p/2) = 100$$

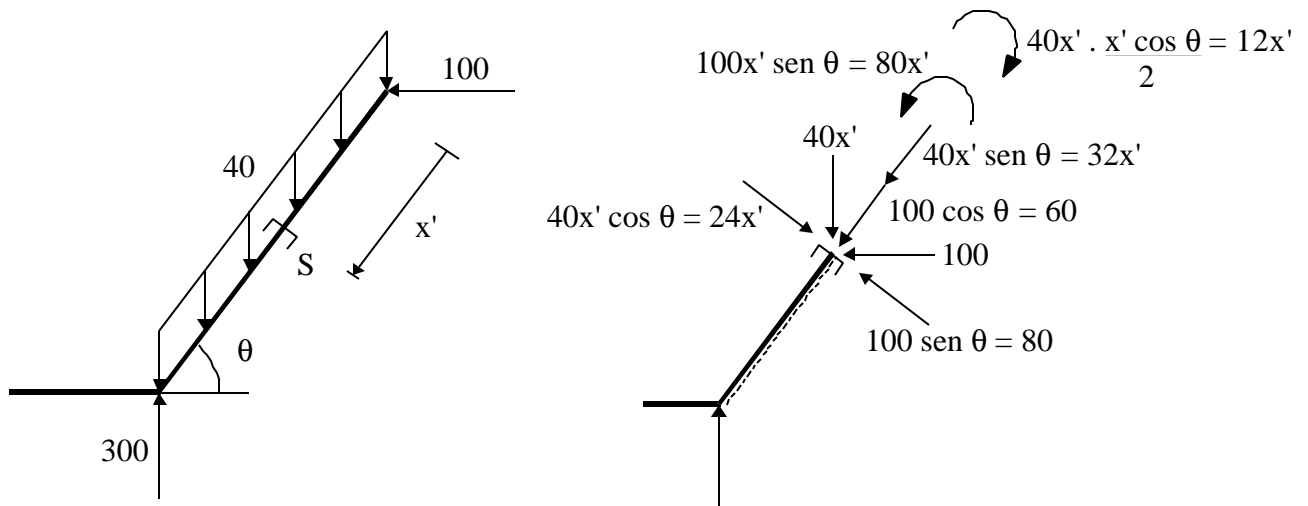
$$V = 100 \text{ cos } \theta \quad \text{P} \quad V(0) = 100$$

$$V(p/2) = 0$$

$$M = 300 \text{ sen } \theta \quad \text{P} \quad M(0) = 0$$

$$M(p/2) = 300$$

Esforços Solicitantes em GF:



entre G e F

$$N = -60 - 32x' \quad \mathbf{P} \quad N(0) = -60$$

$$N(5) = -220$$

$$V = -80 + 24x' \quad \mathbf{P} \quad V(0) = -80$$

$$V(5) = 40$$

$$M = 80x' - 12x'^2 \quad \mathbf{P} \quad M(0) = 0$$

$$M(5) = 100$$

$$V(x') = 0 \quad \mathbf{P} \quad -80 + 24x' = 0 \quad \mathbf{P} \quad x' = 3,33 \text{ m}$$

$$\text{máx } M = M(3,33) = 133,33$$

