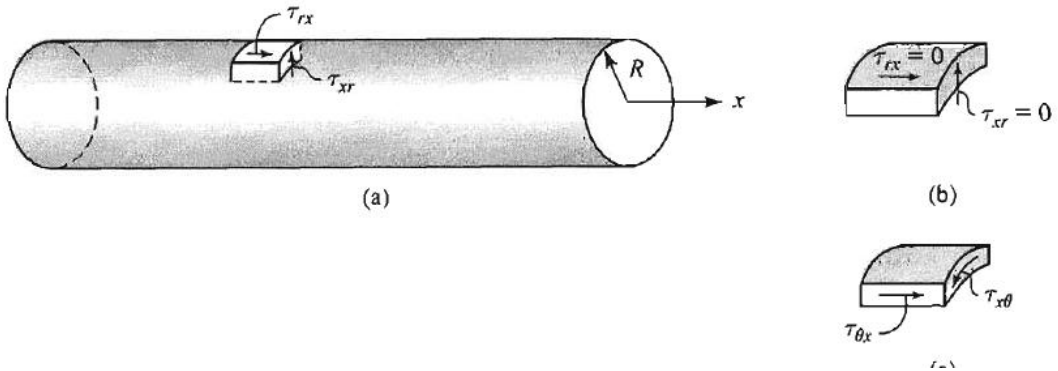
Torção – Exemplos e Exercícios



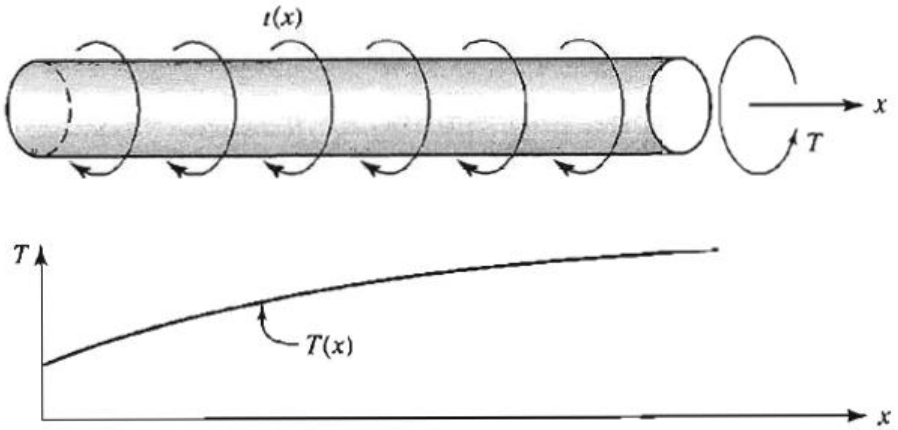
Referência:

Solid Mechanics in Engineering

Raymond Parnes .

John Wiley & Sons . 2001

Exemplo I

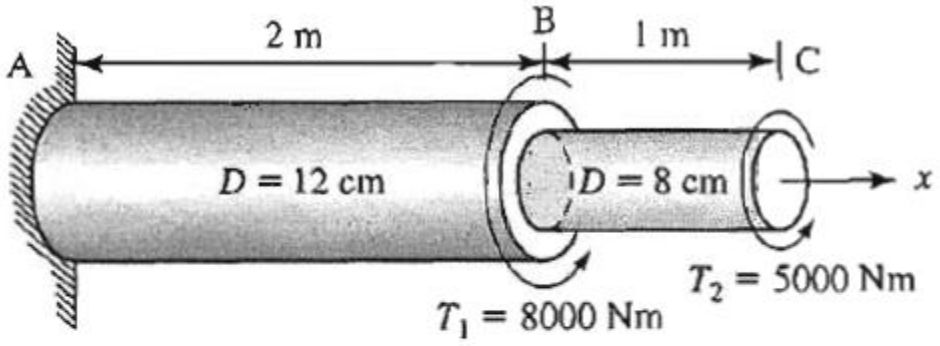


$$\tau(x) = \frac{T(x)r}{J},$$

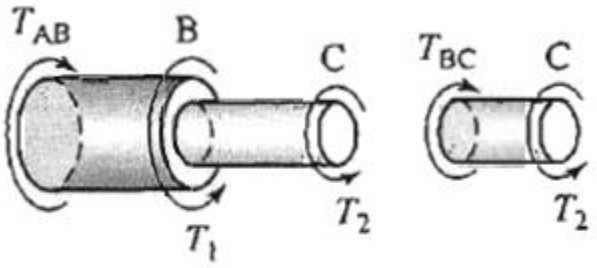
$$\Theta(x) = \frac{T(x)}{GJ}.$$

Extrapolar : coluna de perfuração

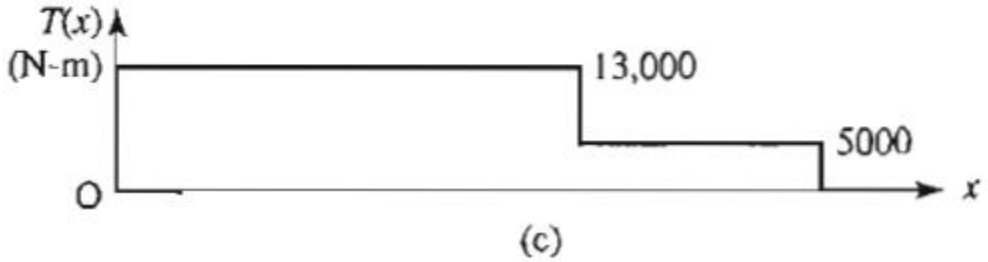
Exemplo II



(a)



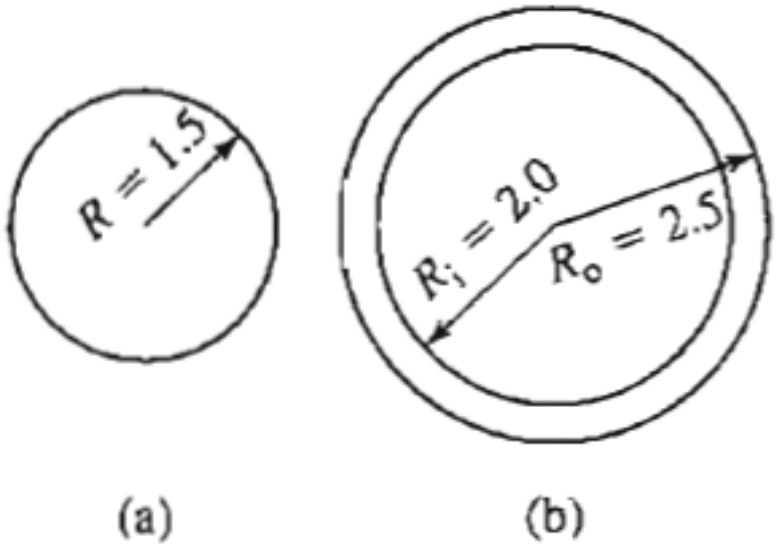
(b)



(c)

Determinar a máxima tensão cisalhante e o ângulo de rotação em C

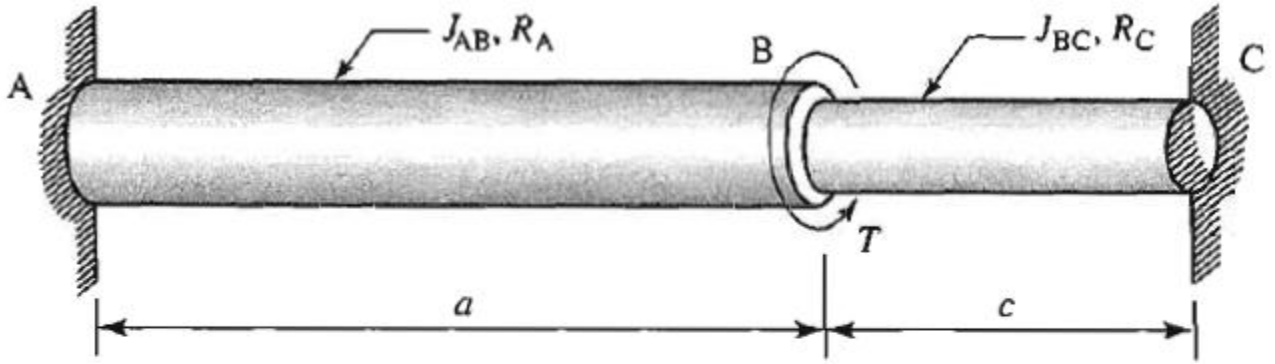
Exemplo III



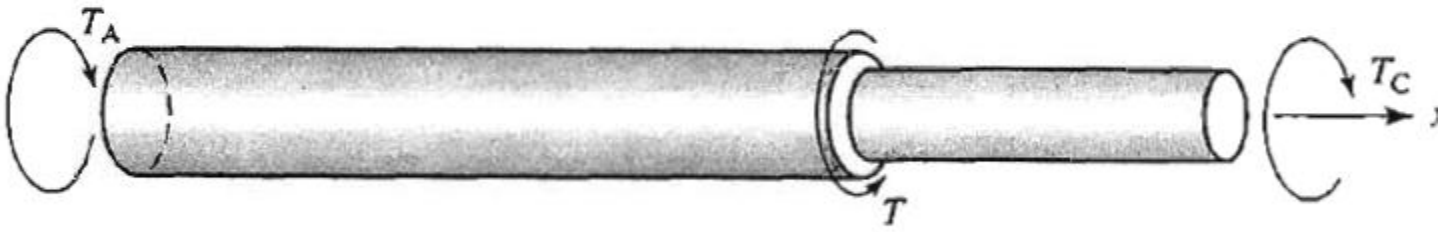
Seção Transversal

Compare ambas as possibilidades para o projeto mecânico de um eixo transmitindo o mesmo torque

Exemplo IV



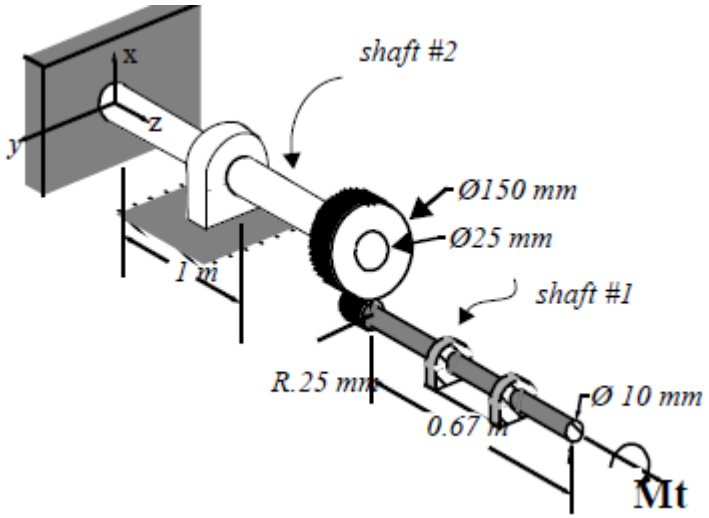
(a)



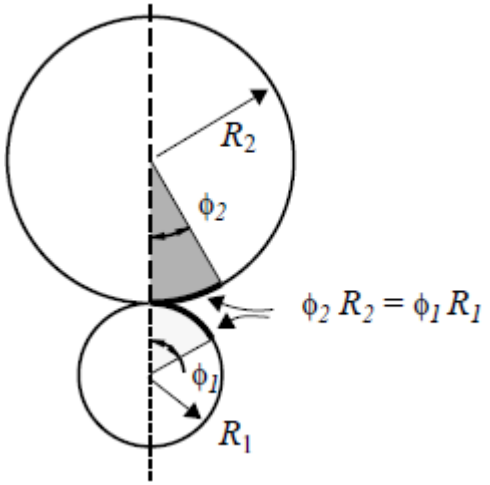
(b)

(c)

Exercício



Dica : compatibilidade cinemática entre os 2 eixos



Calcular a rotação da seção transversal em que é aplicado um torque Mt= 44.35 Nm/rad

Superposição