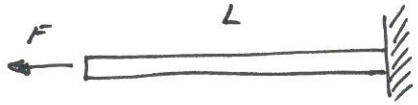
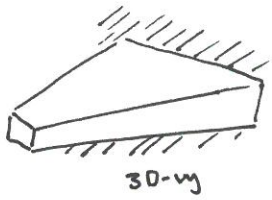
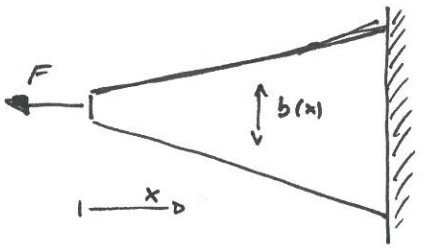
2.1.4.

Givet



Sido-vy





Topp-vy

- Stång
- Tjocklek h
- Bredd $b(x) = b_0 + b_0 \cdot \frac{x}{L}$

Sökt Normalspänning vid x
dvs $\sigma(x)$

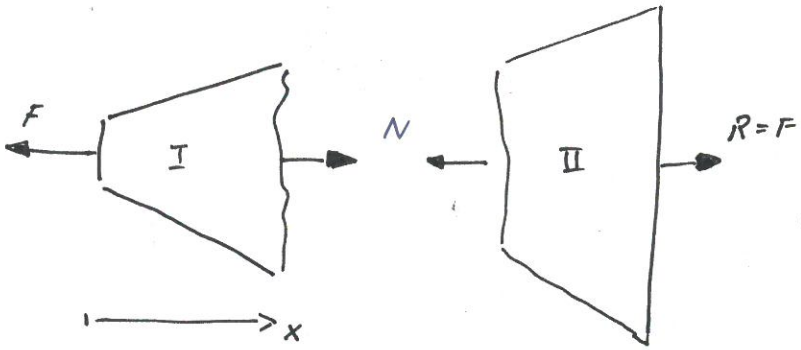
Lösning

1. Frilägg

2. Jämvikt

$\rightarrow: -F + R = 0 \iff R = F$

3. Snitta



4. Jämvikt

$\rightarrow_I: N - F = 0$
$\iff N = F$

Obs.
$\rightarrow_D: -N + F = 0$
$\iff N = F$

5. Lös ut sökt variabel ($\sigma(x)$)

Def. $\left[\sigma = \frac{N}{A}\right]$

dvs $\sigma(x) = \frac{N(x)}{A(x)} \Rightarrow$ Behöver tvärsnittsarean, dvs arean normalkraften $N(x)$ verkar på

$A = b \cdot h = \left(b_0 + b_0 \frac{x}{L}\right) \cdot h = b_0 \cdot h \cdot \left(1 + \frac{x}{L}\right)$

$\therefore \quad \sigma(x) = \frac{F}{b_0 \cdot h \cdot \left(1 + \frac{x}{L}\right)}$

Dim. analys!

$$\frac{[N]}{[m] \cdot [m] \left([-] + \frac{[m]}{[m]}\right)} = \left[\frac{N}{m^2}\right] \text{ OK!}$$