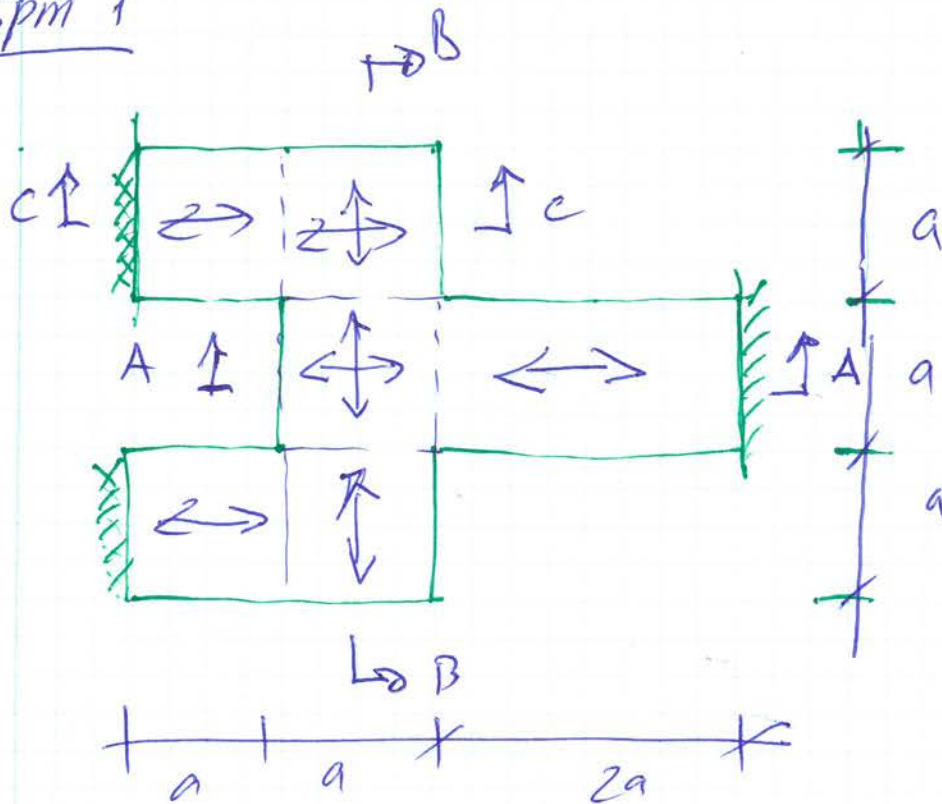
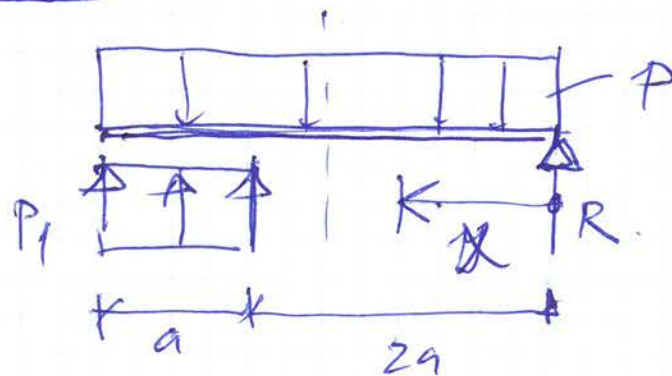


Spm 1



Skud A-A



$$P_1 \frac{5a^2}{2} - p \frac{3^2 a^2}{2} = 0 \Rightarrow$$

$$P_1 = \frac{9}{5} p$$

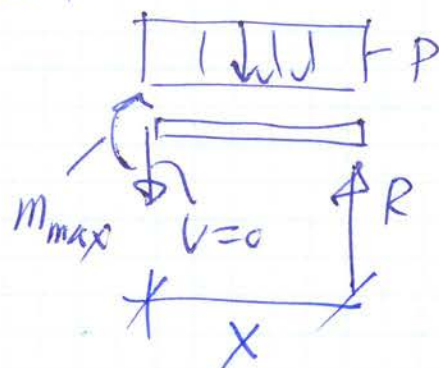
$$R = \frac{6}{5} pa$$

Abstand x til max moment:

$$R - px = 0 \Rightarrow$$

$$\frac{6}{5} pa - px = 0 \Rightarrow$$

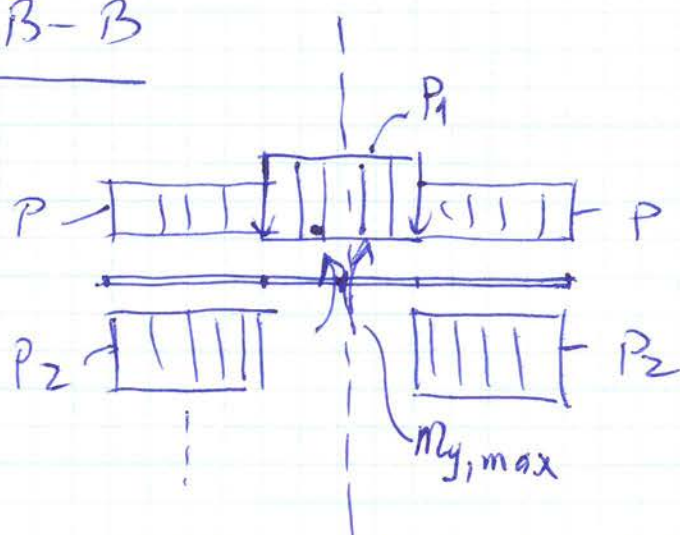
$$x = \frac{6}{5} a$$



$$M_{x,max} = R \cdot x - p \frac{x^2}{2} = \frac{6}{5} pa \cdot \frac{6}{5} a - p \left(\frac{6}{5} a \right)^2 \frac{1}{2}$$

$$M_{x,max} = \frac{18}{25} pa^2 \quad (\text{træk i under siden})$$

Snit B-B



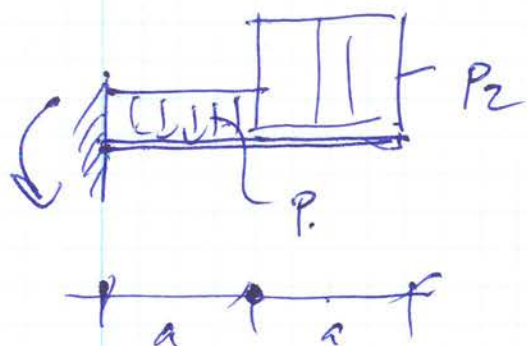
$$2 P_2 \cdot a = 2 pa + P_1 a = 2 pa + \frac{9}{5} pa \Rightarrow$$

$$\boxed{P_2 = \frac{19}{10} p}$$

$$M_{y,max} = (P_2 - p) a \cdot a - P_1 \frac{1}{2} a \cdot \frac{1}{2} a \Rightarrow$$

$$M_{y,max} = \frac{27}{40} pa^2 \quad (\text{træk i under siden})$$

Snit C-C



$$M'_{x, \max} = P_2 a \cdot 1.5a + P \cdot a \cdot \frac{1}{2}a \rightarrow$$

$$M'_{x, \max} = \frac{67}{20} P a^2 \quad (\text{færd i over side})$$

Brud betingelse

$$M_{x, \max} \leq M_{ux} = M_u$$

$$M_{y, \max} \leq M_{uy} = 2M_u$$

$$M'_{x, \max} \leq M'_{ux} = 3M_u$$

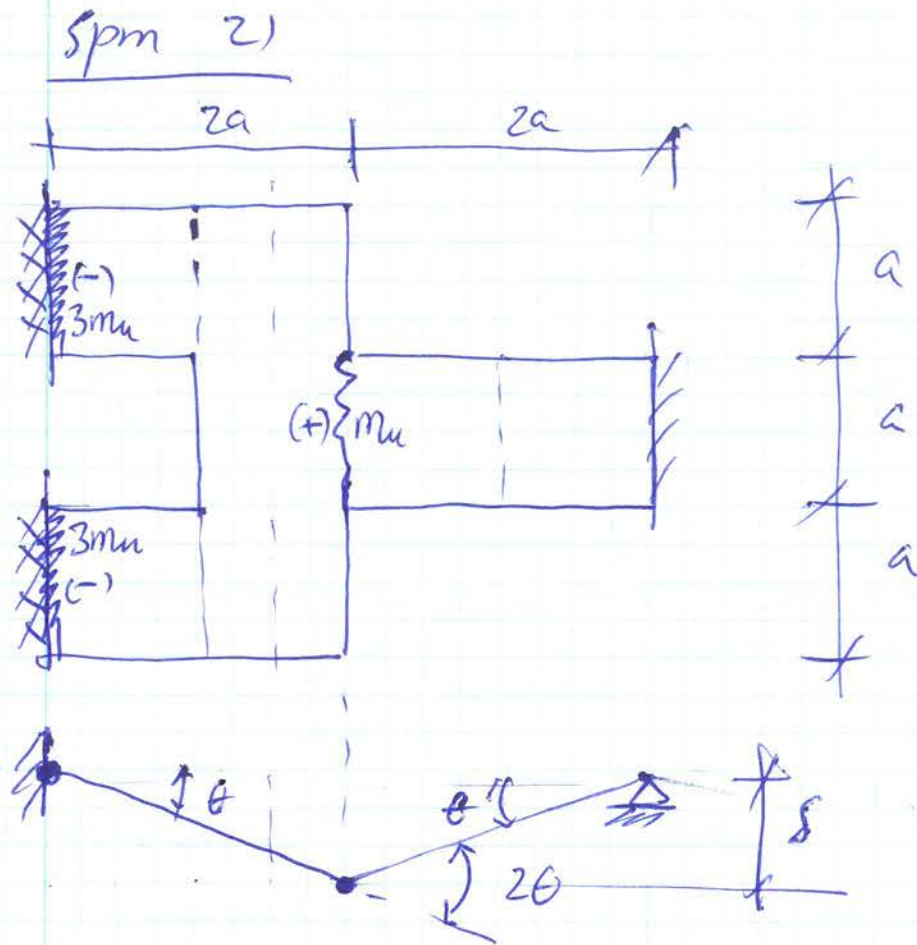
$$P \leq \frac{25}{18} \frac{M_u}{a^2}$$

$$P \leq \frac{80}{27} \frac{M_u}{a^2}$$

$$P \leq \frac{60}{67} \frac{M_u}{a^2}$$

Nedre værdi:

$$P = \frac{60}{67} \frac{M_u}{a^2}$$



Indre arbejde:

$$W_E = p \cdot 2a^2 \cdot \frac{1}{2} \delta + p \cdot a \cdot 3a \cdot \frac{3}{4} \delta + 2p \cdot a^2 \cdot \frac{1}{4} \delta$$

$$W_E = \frac{15}{4} p a^2 \delta$$

Indre arbejde:

$$W_I = m_u \cdot a \cdot 2\theta + \{3m_u \theta\} \cdot 2a, \quad \theta = \frac{\delta}{2a}$$

$$= m_u a \left\{ \frac{\delta}{a} + \frac{3\delta}{a} \right\} \Rightarrow$$

$$W_I = 4m_u \delta$$

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Arbejds ligningen:

$$W_E = W_I \Rightarrow$$

$$\frac{15}{4} p a^2 \delta = 4 m_u \delta \Rightarrow$$

$$p^{(+)} = \frac{16}{15} \frac{m_u}{a^2}$$

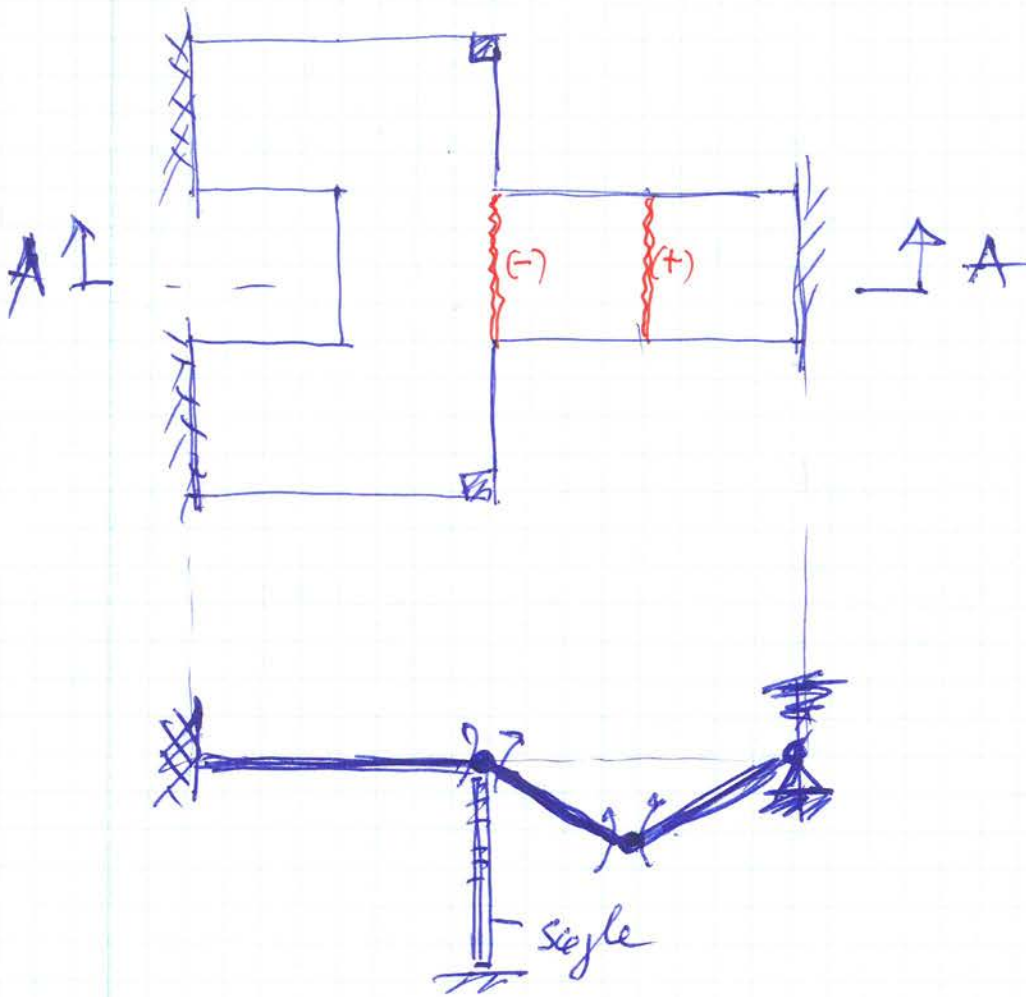
Der, eksakt løsning p_u er et
 sted mellem $p^{(-)}$ og $p^{(+)}$

$$p^{(-)} \leq p_u \leq p^{(+)}$$

$$0,896 \frac{m_u}{a^2} \leq p_u \leq 1,07 \frac{m_u}{a^2}$$


Spm 3

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SWT A - A