Remarks: See §3.3, pages 121 till 122

Answers 3.31-1:

a. NC is on the line of symmetry and 1,375 m from the top
b. $I_{zz} = 1,0625 \text{ m}^4$
c. $I_{yy} = 1,80 \text{ m}^4$

Explanation 3.31-1:

Dimensions in m:

a. Location of NC calculated w.r.t. the top-side:

$$\frac{2\times\{2,5\times 0,3\times 1\}+\{3\times 0,3\times 2\}}{8\times 0,3} = 1,375 \text{ m}$$

b. $I_{zz} = 2\times\left\{\frac{1}{12}\times\frac{5}{4}\times 0,3\times 2^3 + 0,3\times 2,5\times 0,375^2\right\}+\left\{3\times 0,3\times 0,625^2\right\}$

c. $I_{yy} = \left\{\frac{1}{12}\times 0,3\times 3^3\right\}+\left\{\frac{1}{12}\times\frac{5}{3}\times 0,3\times 3^3\right\}$

Answers 3.31-2:

a. NC is on the line of symmetry and 0,5 m from the top edge
b. $I_{zz} = 1,134 \text{ m}^4$
c. $I_{yy} = 6,2208 \text{ m}^4$

Explanation 3.31-2:

Dimensions in m:

a. Location of NC calculated w.r.t. the top-side:

$$\frac{2\times\{3\times 0,3\times 0,9\}}{10,8\times 0,3} = 0,5 \text{ m}$$

b. $I_{zz} = 2\times\left\{\frac{1}{12}\times\frac{5}{3}\times 0,3\times 1,8^3 + 0,3\times 3\times 0,4^2\right\}+\left\{4,8\times 0,3\times 0,5^2\right\}$

c. $I_{yy} = \left\{\frac{1}{12}\times 0,3\times 4,8^3\right\}+\left\{\frac{1}{12}\times\frac{5}{4}\times 0,3\times 4,8^3\right\}$

Answers 3.31-3:

a. NC is on the line of symmetry and 1,33 m from the top edge b.
$I_{zz} = 11,2 \text{ m}^4$

c. $I_{yy} = 22,85 \text{ m}^4$

Explanation 3.31-3:

Dimensions in m:

a. Location of NC calculated w.r.t. the top-side:

$$\frac{2\times\{5\times 0,3\times 2\}+\{1\times 0,3\times 4\}}{18\times 0,3} = 1,33 \text{ m}$$

b. $I_{zz} = 2\times\left\{\frac{1}{12}\times\frac{5}{4}\times 0,3\times 4^3 + 0,3\times 5\times 0,67^2\right\}+\left\{7\times 0,3\times 1,33^2\right\}+\left\{1\times 0,3\times 2,67^2\right\}$

c. $I_{yy} = 2\left\{\frac{1}{12}\times\frac{5}{3}\times 0,3\times 3^3 + 0,3\times 5\times 2^2\right\}+\left\{\frac{1}{12}\times 0,3\times 1^3\right\}+\left\{\frac{1}{12}\times 0,3\times 7^3\right\}$