Remarks: See §3.2.4, pages. 114 till 115, example 7

Answers:

a. $(y,z)=(0,0)$

b. $I_{yy}=281667\ \text{mm}^4$

$I_{zz}=256667\ \text{mm}^4$

c. $I_{zz}=18,027\times10^9\ \text{mm}^4$

d. $I_{zz}=5,926\times10^{12}\ \text{mm}^4;\ 99,7\%$

Explanation:

All dimensions in mm

b. $I_{yy}=\left\{\frac{1}{12}\times5\times70^3\right\}+2\times\left\{\frac{1}{12}\times45\times5^3+45\times5\times17,5^2\right\}=281667\ \text{mm}^4$

$I_{zz}=2\times\left\{\frac{1}{12}\times5\times40^3\right\}+2\times\left\{\frac{1}{12}\times40\times5^3+40\times5\times22,5^2\right\}=256667\ \text{mm}^4$

c. $I_{zz}=2\times\left\{\frac{1}{12}\times2\times2600^3\right\}+2\times\left\{1800\times2\times1300^2\right\}=18,027\times10^9\ \text{mm}^4$

d. $I_{zz}=I_{zz;box}+\left\{12\times I_{zz;\text{stiffener}}\times1275^2\right\}+\left\{4\times I_{yy;\text{stiffener}}\times800^2\right\}+\left\{4\times I_{yy;\text{stiffener}}\times400^2\right\}\ =5,926\times10^{12}\ \text{mm}^4$