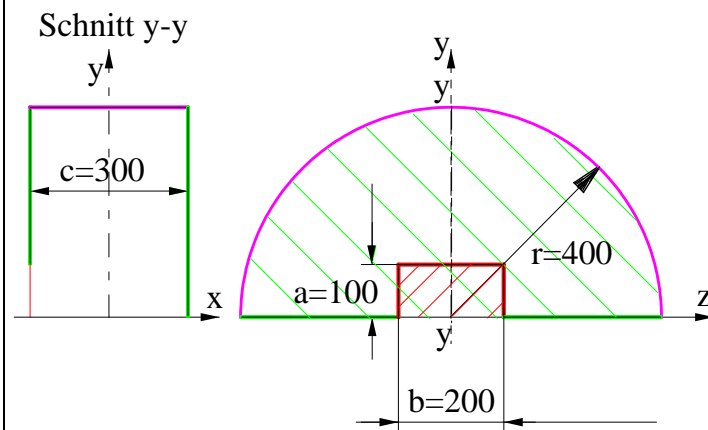


Aufgabe 2:



$$y_S = \frac{\sum y_{Si} \cdot A_i}{\sum A_i}$$

$$y_S = \frac{\frac{4r}{3\pi} \cdot 2r^2 \frac{\pi}{2} + \frac{2r}{\pi} \cdot \pi r c - \frac{a}{2} \cdot ab}{2r^2 \frac{\pi}{2} + \pi r c - ab} = \frac{\frac{4}{3} r^3 + 2r^2 c - \frac{a^2 b}{2}}{\pi r^2 + \pi r c - ab} = \frac{\frac{4}{3} 64 + 2 \cdot 16 \cdot 3 - 1}{\pi (16 + 12) - 2} \text{ dm}$$

$$y_S = 209,8 \text{ mm}$$

$$x_S = \frac{\sum x_{Si} \cdot A_i}{\sum A_i} = \frac{\frac{c}{2} ab}{\pi r^2 + \pi r c - ab} = \frac{3}{\pi (16 + 12) - 2} \text{ dm} = 3,49 \text{ mm}$$

$$z_S = 0 \quad (\text{Symmetrie})$$

Halbkreisfläche:

$$A_{HK} = r^2 \frac{\pi}{2} = 25,13 \text{ dm}^2$$

Halbkreisbogen:

$$s_{HB} = \pi \cdot r = 12,56 \text{ dm}$$

Rechteckfläche:

$$A_R = a \cdot b = 2 \text{ dm}^2$$

Schwerpunktsabstände:

$$y_{HKA} = \frac{4r}{3\pi} = 1,698 \text{ dm}$$

$$y_{HKB} = \frac{2r}{\pi} = 2,546 \text{ dm}$$

$$y_R = \frac{a}{2} = 0,5 \text{ dm}$$