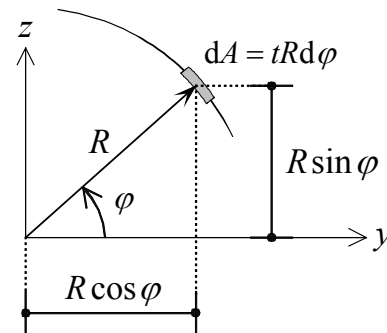


Opmerkingen: Zie §3.1.4, voorbeeld 3, blz. 75 t/m 77

Antwoorden 3.10-1:

a. $A = \frac{1}{2} \pi R t$

b. $y_C = \frac{2R}{\pi}$; $z_C = \frac{2R}{\pi}$



Toelichting 3.10-2:

$$A = \int_0^{\pi/2} t \cdot R d\varphi = R t \varphi \Big|_0^{\pi/2} = \frac{\pi R t}{2}$$

$$S_y = \int_0^{\pi/2} R \cos \varphi \cdot t R d\varphi = R^2 t \sin \varphi \Big|_0^{\pi/2} = R^2 t$$

$$S_z = \int_0^{\pi/2} R \sin \varphi \cdot t R d\varphi = -R^2 t \cos \varphi \Big|_0^{\pi/2} = R^2 t$$

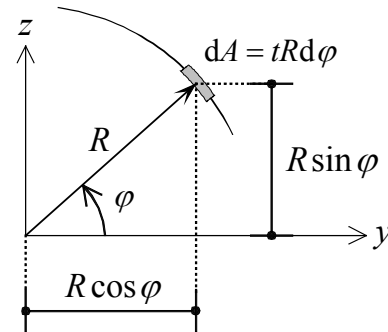
$$y_C = z_C = \frac{R^2 t}{\frac{\pi R t}{2}} = \frac{2R}{\pi}$$

Opmerkingen: Zie §3.1.4, voorbeeld 3, blz. 75 t/m 77

Antwoorden 3.10-2:

a. $A = \pi R t$

b. $y_C = 0$; $z_C = \frac{2R}{\pi}$



Toelichting 3.10-2:

$$A = \int_0^{\pi} t \cdot R d\varphi = R t \varphi \Big|_0^{\pi} = \pi R t$$

$$S_y = \int_0^{\pi} R \cos \varphi \cdot t R d\varphi = R^2 t \sin \varphi \Big|_0^{\pi} = 0$$

$$S_y = \int_0^{\pi} R \sin \varphi \cdot t R d\varphi = -R^2 t \cos \varphi \Big|_0^{\pi} = 2R^2 t$$

$$y_C = \frac{0}{\pi R t} = 0$$

$$z_C = \frac{2R^2 t}{\pi R t} = \frac{2R}{\pi}$$