

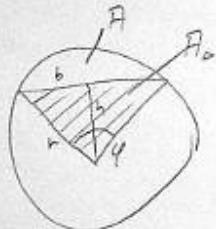
$$A_{\text{phi}} = \pi r^2$$

$$A_0 = \frac{r^2}{2} \cdot \varphi$$

A_{ges}

$$A = A_{\text{phi}} - A_0 \\ = r^2 \cdot \frac{\varphi}{2} - \frac{\pi r^2}{2} \cdot \varphi$$

$$A = \frac{r^2}{2} (\varphi - \pi \sin \varphi)$$



$$A_0 = b \cdot h$$

$$b = \sin \frac{\varphi}{2} \cdot r$$

$$h = \cos \frac{\varphi}{2} \cdot r$$

$$A_0 = \sin \frac{\varphi}{2} \cdot \cos \frac{\varphi}{2} \cdot r^2$$

$$A_{\Delta} = \frac{1}{2} \sin \varphi \cdot r^2$$

Additionstheorem

$$\sin(\alpha \pm \beta) = \sin \alpha \cos \beta \pm \cos \alpha \sin \beta$$

$$\begin{aligned} \sin(2\alpha) &= 2 \sin \alpha \cos \alpha \\ \frac{1}{2} \sin(2\alpha) &= \sin \alpha \cos \alpha \end{aligned}$$

%Labor Nr. 3 Segment Gauss-Seidel

```
clear all
clc
%Variablen
As= input('Fläche in m²: ');
r= input('Radius des Rades in m: ');
eps= input('It.fortschr. Genauigk. in % zB. 0.1%: ');
imax= input('Anzahl der max Iterationsschritte: ');
%implementierte Funktion
[Xneu,i]=agm(As,r,eps,imax);
%Ausgabe
i
Xneu=Xneu*180/pi
```

```
function [Xneu,i]=agm(As,r,eps,imax)

% Startwert
Xneu=0,5;

Xalt=inf;
i=0;
while abs(Xneu-Xalt)>eps
    i=i+1;
    if i>imax
        error('max Anzahl der Iterationsschritte erreicht!')
    end
    Xalt=Xneu;
    Xneu=2*As/r^2+sin(Xalt);
end
```