FKD
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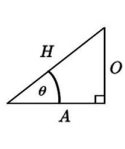
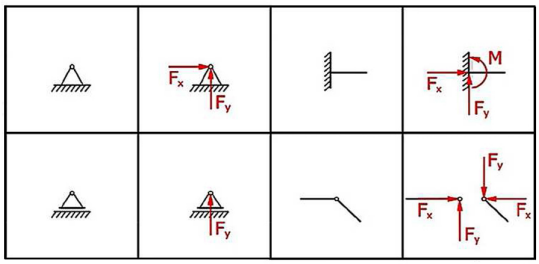



$$\sin(\theta) = \frac{O}{H}$$
$$\cos(\theta) = \frac{A}{H}$$
$$\tan(\theta) = \frac{O}{A}$$

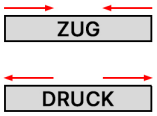



## Fachwerk Nullstäbe

**1. Fall**

**2. Fall**

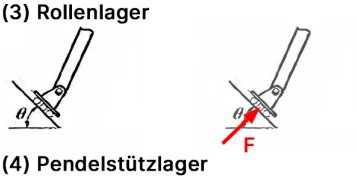
**3. Fall**

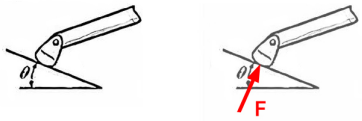

## (1) Seil


## (2) Pendelstütze


## (3) Rollenlager

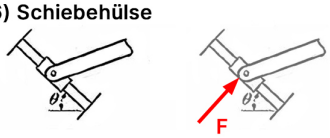



## (4) Pendelstützlager

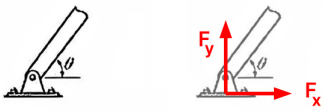



## (5) Glatte Fläche

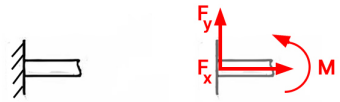

## (6) Schiebehülse



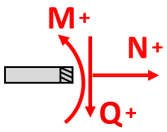

## (7) Festlager




## (8) Einspannung

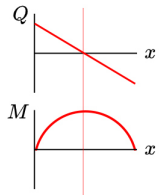



## Schnittgrößen Skizze

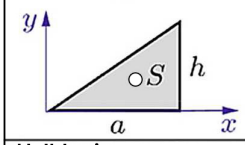



$Q = Konstant$
$M = Linear$

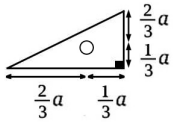
$Q = Linear$
$M = Quadratisch$



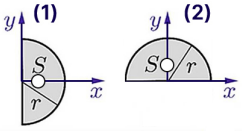

## Dreieck




$A = \frac{1}{2}ah$
$x_s = \frac{2}{3}a$
$y_s = \frac{1}{3}h$



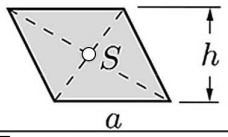

## Halbkreis




$A = \frac{\pi r^2}{2}$

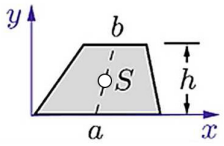
| (1) | (2) |
|---|---|
| $x_s = \frac{4r}{3\pi}$ | $x_s = 0$ |
| $y_s = 0$ | $y_s = \frac{4r}{3\pi}$ |

## Parallelogramm



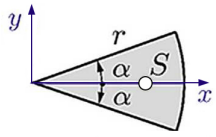

$A = ah$
$S$ liegt im Schnittpunkt der Diagonalen

## Trapez



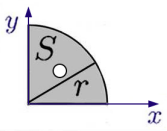

$A = \frac{h}{2}(a+b)$
$S$ liegt auf der Seitenhalbierenden
$y_s = \frac{h}{3}\frac{a+2b}{a+b}$

## Kreisausschnitt



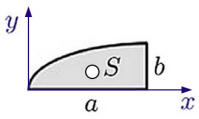

$A = \alpha r^2$
$x_s = \frac{2r}{3}\frac{\sin\alpha}{\alpha}$

## Viertelkreis



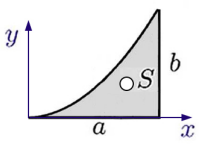

$A = \frac{\pi r^2}{4}$
$x_s = \frac{4r}{3\pi}$
$y_s = \frac{4r}{3\pi}$

## Parabel




quadratische Parabel
$A = \frac{2}{3}ab$
$x_s = \frac{3}{5}a$
$y_s = \frac{3}{8}b$

## Unbekannte Parabel




$y = x^n$

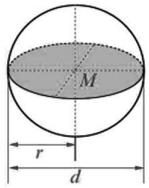
$A = \frac{1}{(n+1)}bh$

$x_s = \frac{n+1}{n+2}b \qquad y_s = \frac{n+1}{4n+2}h$

## Volumen

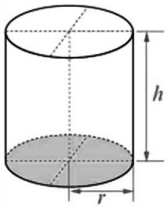
$\mathbf{V = A \cdot d}$ — A = Fläche [m²] , d = Dicke [m]

### Kugel




$A = 4\pi\ r^2$
$V = \frac{4}{3}\pi \cdot r^3$

### Zylinder




$V = \pi r^2 h; \quad A = 2\pi rh$

| | | |
|---|---|---|
| **Flächenschwerpunkt** | $x_s = \frac{\sum \tilde{x}_i \cdot A_i}{\sum A_i}$ $y_s = \frac{\sum \tilde{y}_i \cdot A_i}{\sum A_i}$ | |
| **Streckenlast Kraft** | $F_q = q \cdot l$ | q = Streckenlast<br>l = Gesamt Länge |
| **Dichte** | $\rho = \frac{m}{V}$ | m = Masse<br>V = Volumen |
| **Kräfte Zerlegung(x)** | $F_x = F \cdot cos\alpha$<br>$F_y = F \cdot sin\alpha$ | *winkel mit x - achse* |
| **Kräfte Zerlegung(y)** | $F_x = F \cdot sin\alpha$<br>$F_y = F \cdot cos\alpha$ | *winkel mit y - achse* |