

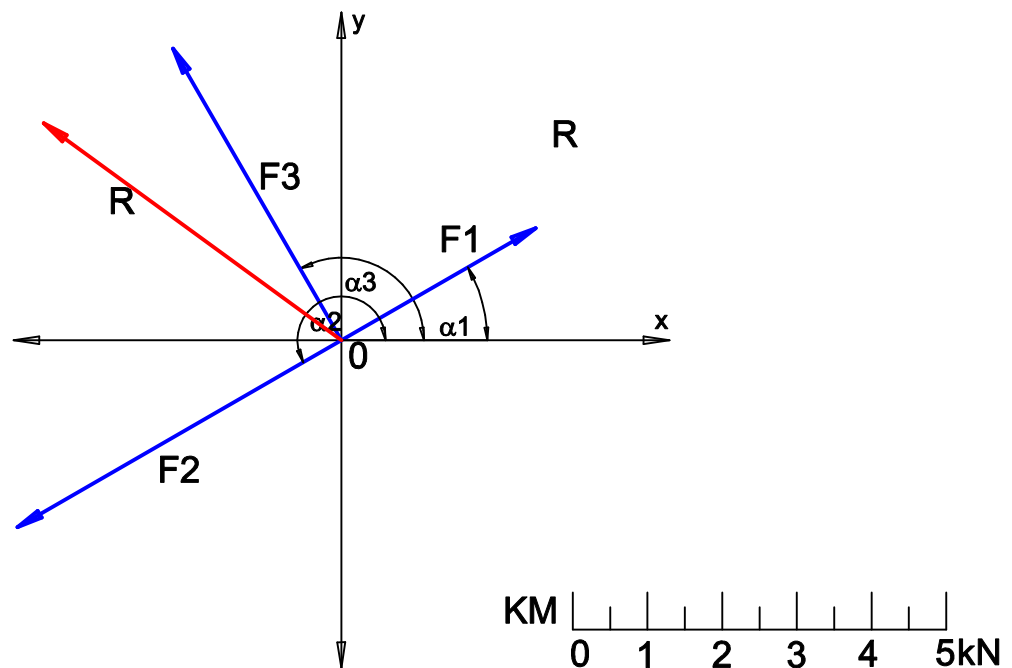
# ZENTRALES EBENES KRAFTSYSTEM

## BEISPIEL:

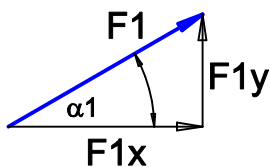
**GEG:**  $F_1=3\text{kN}$  ;  $\alpha_1=30^\circ$   
 $F_2=5\text{kN}$  ;  $\alpha_2=210^\circ$   
 $F_3=4,5\text{kN}$  ;  $\alpha_3=120^\circ$

**GES:** R (rechnerische Methode)

## KRAFTSYSTEM



## KRÄFTEZERLEGUNG



$$F_{1x} = F_1 \cdot \cos(\alpha_1) = 3 \cdot \cos(30^\circ) = 2,60\text{kN}$$

$$F_{1y} = F_1 \cdot \sin(\alpha_1) = 3 \cdot \sin(30^\circ) = 1,50\text{kN}$$

STATIK

**ZENTRALES EBENES  
KRAFTSYSTEM**

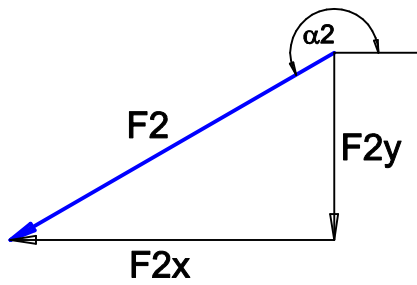
KM 1kN=1cm

KULLE G.

2007/08

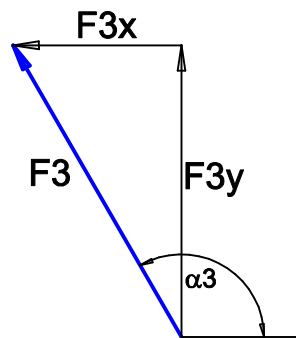
BLATT: 12.1

# ZENTRALES EBENES KRAFTSYSTEM



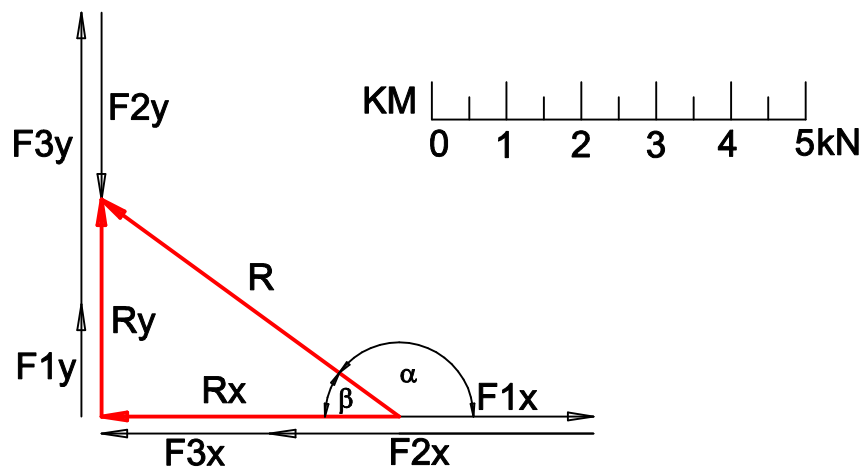
$$F_{2x} = F_2 \cdot \cos(\alpha_2) = 5 \cdot \cos(210^\circ) = -4,33\text{kN}$$

$$F_{2y} = F_2 \cdot \sin(\alpha_2) = 5 \cdot \sin(210^\circ) = -2,50\text{kN}$$



$$F_{3x} = F_3 \cdot \cos(\alpha_3) = 4,5 \cdot \cos(120^\circ) = -2,25\text{kN}$$

$$F_{3y} = F_3 \cdot \sin(\alpha_3) = 4,5 \cdot \sin(120^\circ) = 3,90\text{kN}$$



$$R_x = F_{1x} + F_{2x} + F_{3x} = 2,60 + (-4,33) + (-2,25) = -3,98\text{kN}$$

$$R_y = F_{1y} + F_{2y} + F_{3y} = 1,50 + (-2,50) + 3,90 = 2,90\text{kN}$$

$$R = \sqrt{R_x^2 + R_y^2} = \sqrt{-3,98^2 + 2,90^2} = 4,92\text{kN}$$

$$\beta = \text{atan}(|R_y| / |R_x|) = \text{atan}(2,90 / 3,98) = 36,08^\circ$$

$$\alpha = 180^\circ - \beta = 180^\circ - 36,08^\circ = 143,92^\circ$$

STATIK

**ZENTRALES EBENES  
KRAFTSYSTEM**

KM 1kN=1cm

2007/08

KULLE G.

BLATT: 12.2