

KLASKAMER 10

GRAAD 11 FISIESE WETENSKAPPE

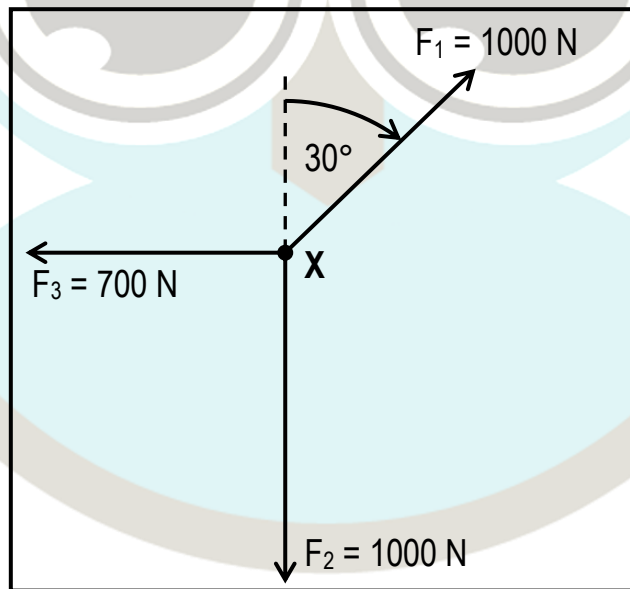
Vektore en Vektordiagramme

'n Vinnige recap oor die konsepte:

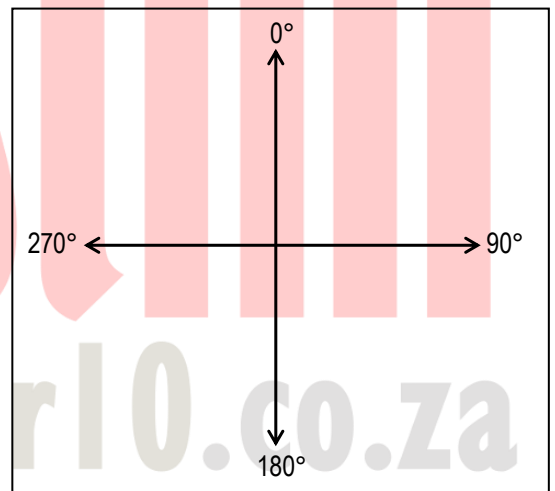
- Ontbinding van vektore in komponente
- Berekening van resultante vektore

Vraag 1:

In die onderstaande diagram word die grootte en rigting van drie kragte (F_1 , F_2 en F_3) getoon wat inwerk op 'n punt X.



- 1.1 Bepaal die grootte en rigting van die horisontale- asook vertikale komponente van die krag F_1 .
- 1.2 Bepaal die grootte van die resultante krag wat inwerk op punt X.
- 1.3 Bepaal die rigting van die resultante krag wat inwerk op punt X.



GRAAD 11 FISIESE WETENSKAPPE (MEMORANDUM)

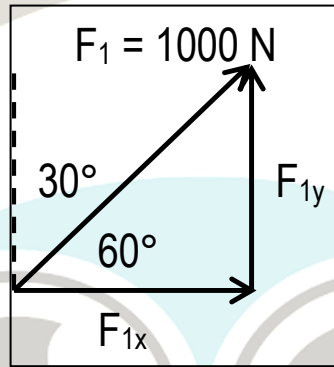
Vektore en Vektordiagramme

1.1

$$F_{1x} = F_1 \cos \theta$$

$$F_{1x} = (1000) \cos 60^\circ$$

$$F_{1x} = 500 \text{ N} ; 90^\circ$$



$$F_{1y} = F_1 \sin \theta$$

$$F_{1y} = (1000) \sin 60^\circ$$

$$F_{1y} = 866,03 \text{ N} ; 0^\circ$$

1.2

Neem 90° as die positiewe rigting:

$$F_x = (+F_{1x}) + (-F_3)$$

$$F_x = 500 - 700$$

$$F_x = -200 \text{ N}$$

$$F_x = 200 \text{ N} ; 270^\circ$$

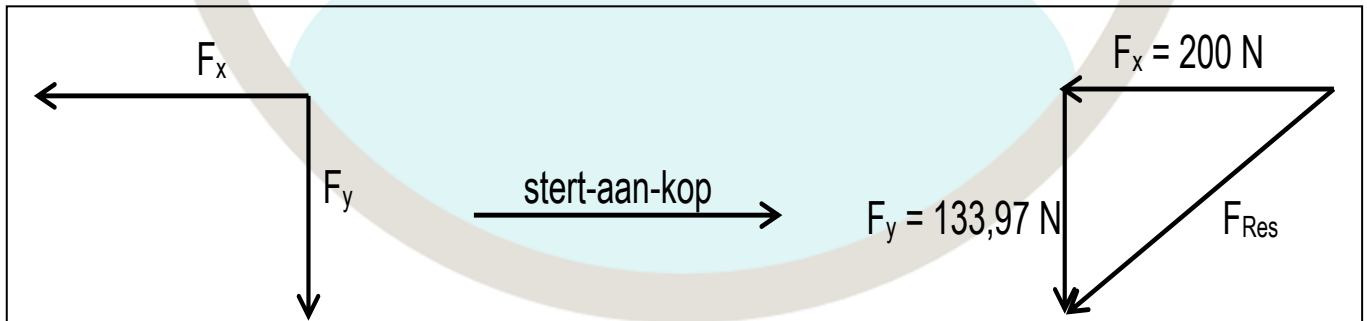
Neem 0° as die positiewe rigting

$$F_y = (+F_{1y}) + (-F_2)$$

$$F_y = 866,03 - 1000$$

$$F_y = -133,97 \text{ N}$$

$$F_y = 133,97 \text{ N} ; 180^\circ$$



$$F_{Res}^2 = F_x^2 + F_y^2 \quad (\text{Pythagoras})$$

$$F_{Res}^2 = (200)^2 + (133,97)^2$$

$$F_{Res} = 240,73 \text{ N}$$

1.3

$$\tan \theta = \frac{t}{a} = \frac{F_y}{F_x} = \frac{133,97}{200}$$

$$\theta = 33,82^\circ$$

$$F_{Res} = 240,73 \text{ N teen } (270^\circ - 33,82^\circ) = 236,18^\circ$$