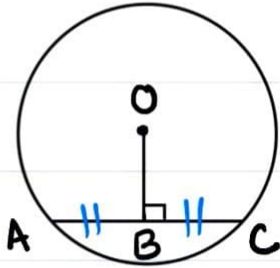


Euklidiese Meetkunde : Deel 1

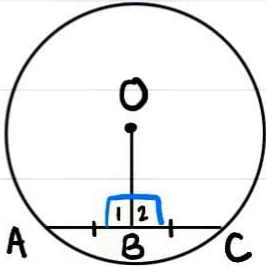
STELLINGS:

Middelpunt / Middellyn / radius



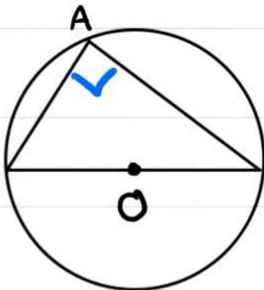
$$AB = BC$$

(loodlyn uit midpunt $\odot$ na koord)



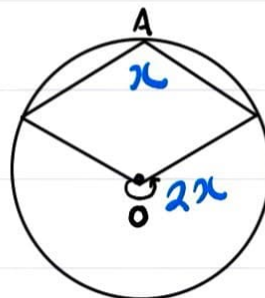
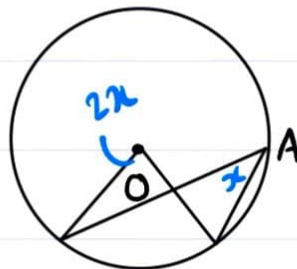
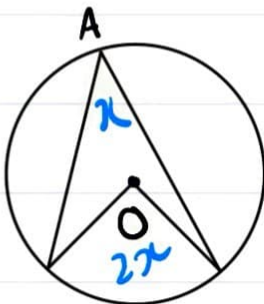
$$\hat{B}_1 = \hat{B}_2 = 90^\circ$$

(Lyn uit midpunt $\odot$ na midpunt v. koord)



$$\hat{A} = 90^\circ$$

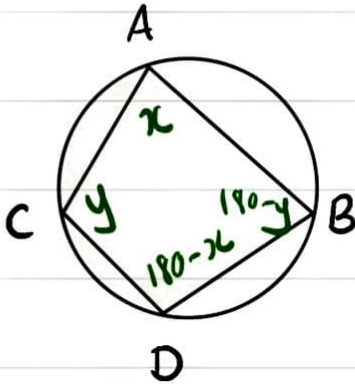
($\angle$ in halwe $\odot$)



$$\hat{O} = 2\hat{A}$$

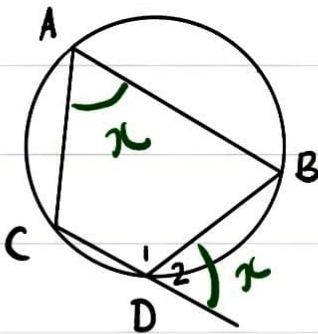
(Midpunts $\angle = 2 \times$ Omtreks $\angle$)

Koordevierhoek / Konsiklus / KYK vir 4 punte op omtrek



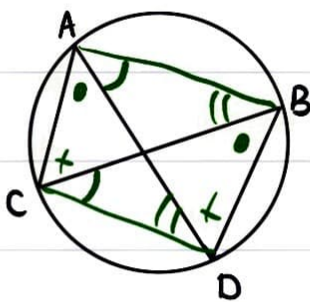
$$\hat{A} + \hat{D} = 180^\circ \text{ en } \hat{C} + \hat{B} = 180^\circ$$

(teenoorst $\angle$ e v kvhk = 180°)



$$\hat{D}_2 = \hat{A}$$

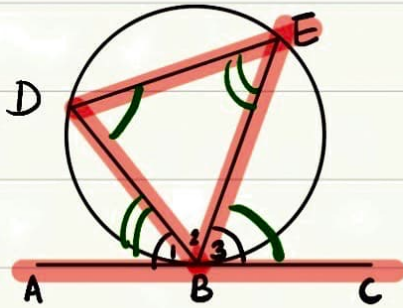
(Buite $\angle$ v. kvhk)



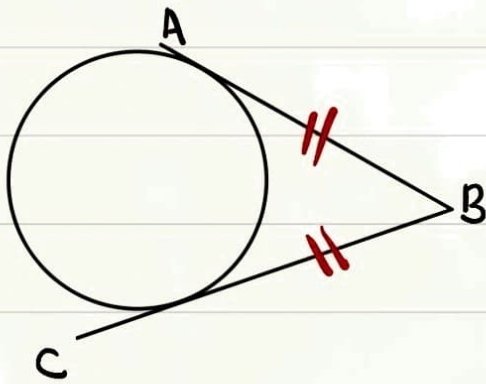
$$\hat{A} = \hat{C} \text{ en } \hat{B} = \hat{D}$$

($\angle$ e in dies. $\odot$ segm)

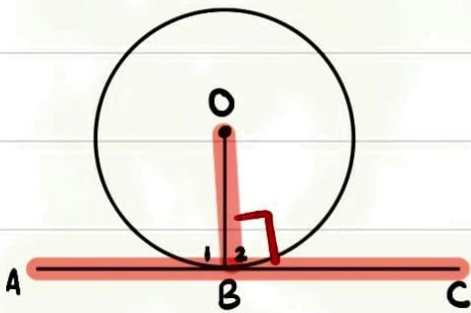
Raaklyne / Raak



$\hat{B}_1 = \hat{E}$ en $\hat{B}_3 = \hat{D}$
($\angle$ tussen raaklyn en koord)

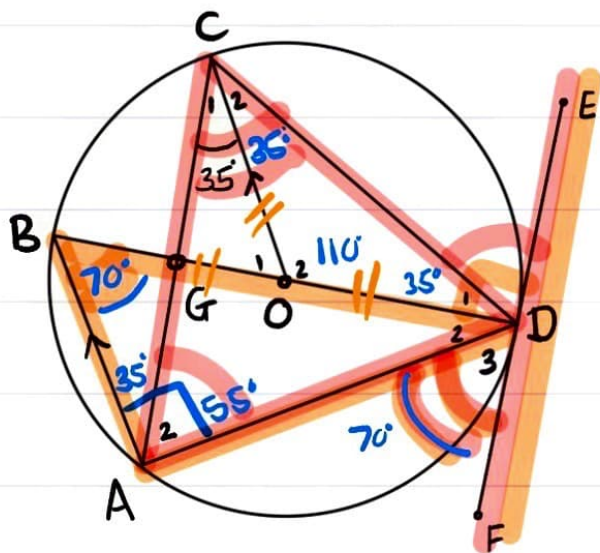


$AB = CB$
(raaklyne vanuit dies. punt)



$\hat{B}_1 = \hat{B}_2 = 90^\circ$
(raaklyn $\perp$ radius)

① In die onderstaande skets is O die middelpunt van die sirkel. EF is 'n raaklyn aan sirkel by D .



Bepaal met rekes, die groottes van:

a) $\hat{A}_1 = 35^\circ$ (verwischende 2° , BA || CO)

b) $\hat{A}_2$ $\hat{A}_1 + \hat{A}_2 = 90^\circ$ ($\angle$ in halben Kreis)
 $\hat{A}_2 = 90^\circ - 35^\circ = 55^\circ$

c) $\hat{O}_2 = 110^\circ$ (Middelpuntsz $= 2 \times$ omtreksz)

d) $\hat{C}_2$

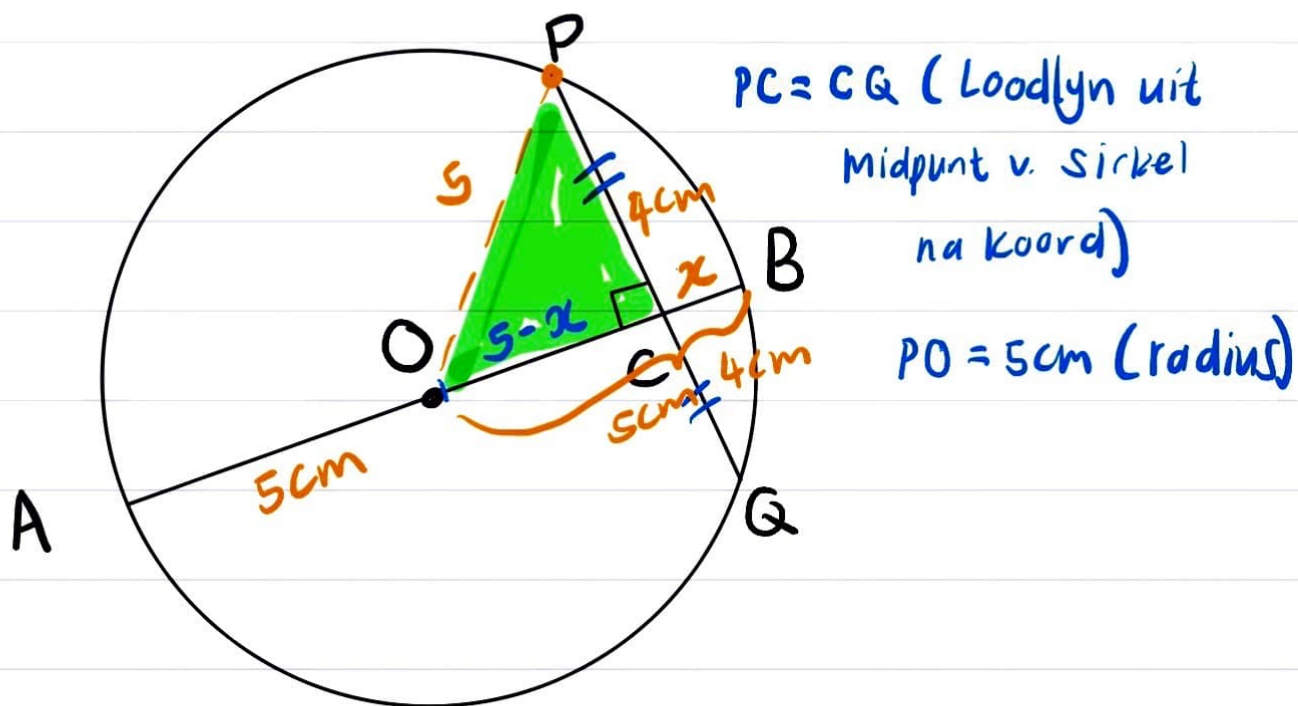
$CO = OD$ (radiusse)

$\hat{C}_2 = \frac{180^\circ - 110^\circ}{2} = 35^\circ$ (2 teenoor gelyke sye;
binne 2 v. Δ)

e) $\hat{B} = 70^\circ$ ($\angle^e$ in dieselbe sirkelsegment)

f) $\hat{D}_3 = 70^\circ$ ($\angle$ tussen radklyn-koord)

- ② O is die middelpunt in die onderstaande skets. AB sny koord PQ loodreg.
 $AB = 10\text{ cm}$, $PQ = 8\text{ cm}$ en $CB = x\text{ cm}$. Bereken x .



In $\triangle POC$: $5^2 = 4^2 + (5-x)^2$ (Pyth)

$25 = 16 + 25 - 10x + x^2$

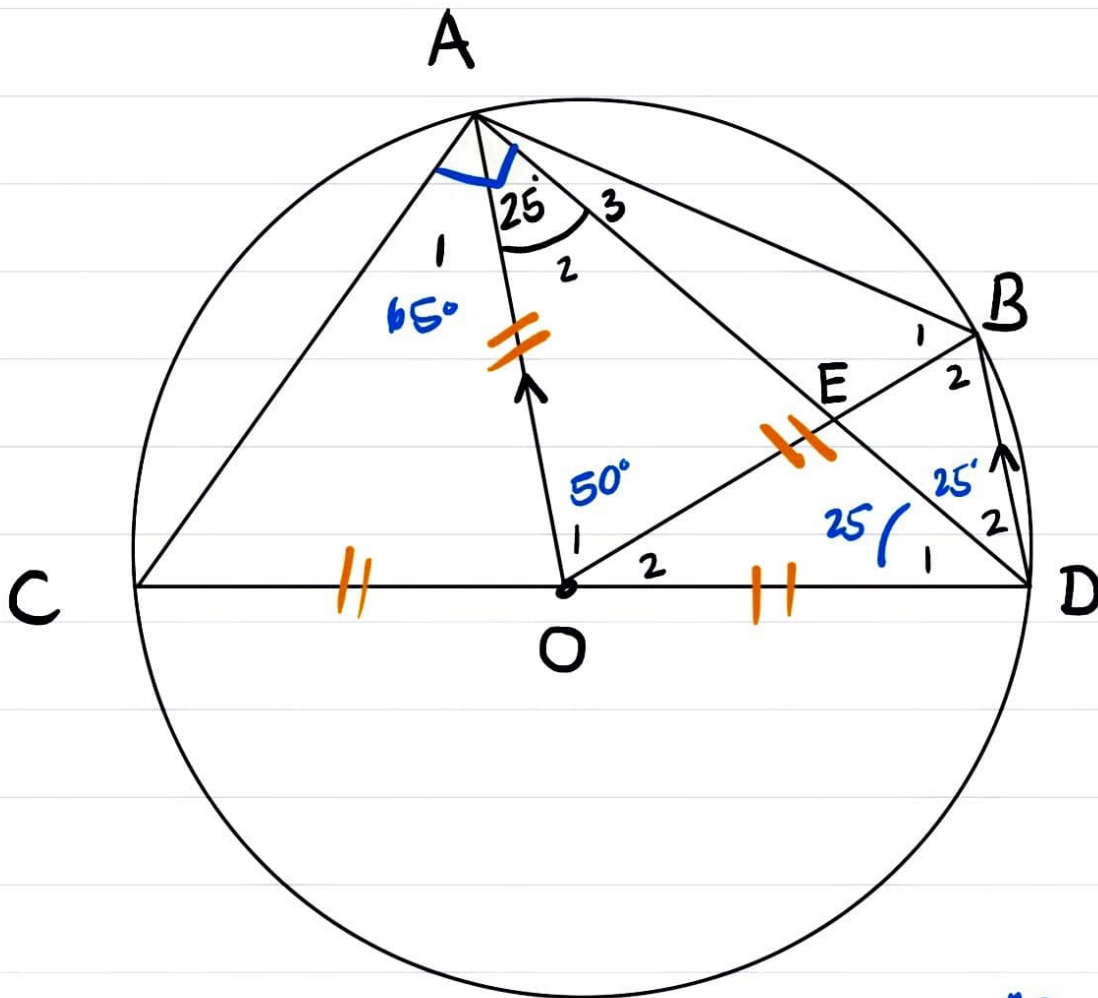
$0 = x^2 - 10x + 16$

$0 = (x-8)(x-2)$

$\therefore x = 8\text{ cm}$ of $x = 2\text{ cm}$

N.V.T

③ O is die middelpunt en $AO \parallel BD$. $\hat{OAE} = 25^\circ$



$AO = OD$ (radiusse)

$\hat{D}_1 = 25^\circ$ ($\angle^e$ teenoor
geelyke sye)

$\angle CAD = 90^\circ$ ($\angle$ in
halwe sirkel)

$\therefore \hat{A}_1 = 90^\circ - 25^\circ = 65^\circ$

Bepaal die grootte van:

a)

$\hat{O}_1$

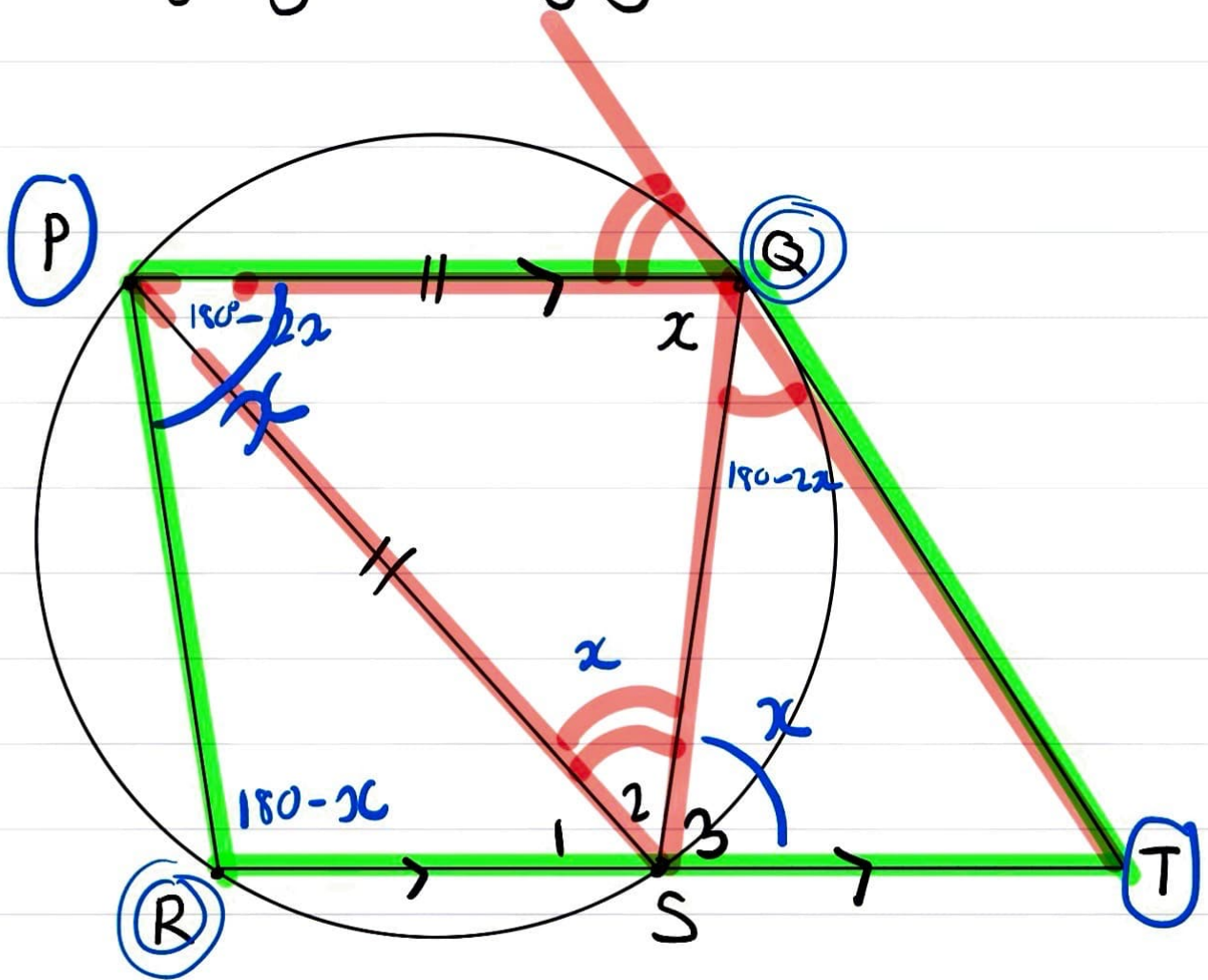
$\hat{D}_2 = 25^\circ$ (verwisselend, $AO \parallel BD$)

$\hat{O}_1 = 50^\circ$ (Middelpunt $\angle = 2 \times$ Omtreks $\angle$)

b) $\hat{C}$

$\hat{C} = 180^\circ - 90^\circ - 25^\circ = 65^\circ$
(Binne $\angle^e$ v Δ)

- ④ In die onderstaande skets is $PQ = PS$.
 QT is 'n raaklyn aan sirkel by Q en RST is 'n reguitlyn ewewydig aan PQ .



- a) As $\hat{PQS} = x$, skryf nog 3 ander hoeke neer wat gelyk is aan x .

$\hat{S}_2 = x$ (Leë teenoor gelyke sye)
 $\hat{S}_3 = x$ (verwisselend, $PQ \parallel ST$)
 $\hat{P} = x$ (Buite $\angle$ van kink $PQSR$)

b) Bereken $\hat{SQT}$ i.t.v x .

$$\hat{SPQ} = 180^\circ - 2x \text{ (Binne } \angle \text{ v } \Delta)$$

$$\hat{SQT} = 180^\circ - 2x \text{ (} \angle \text{ tussen raaklyn-koord)}$$

c) Bewys dat PQTR 'n parallelogram is.

In ΔSQT :

$$\hat{T} = 180^\circ - x - (180^\circ - 2x) = 180^\circ - x - 180^\circ + 2x = \underline{\underline{x}}$$

$$\hat{P} = \underline{\underline{x}}$$

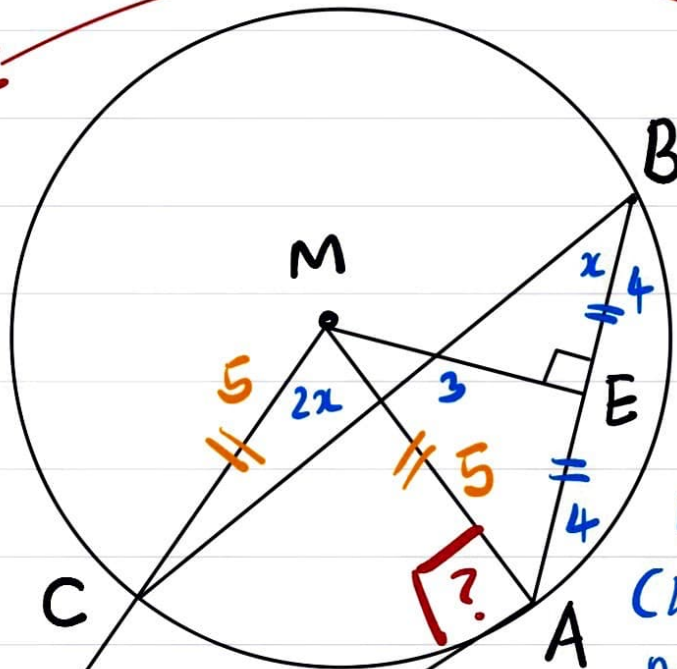
$$\hat{Q} = x + 180^\circ - 2x = \underline{\underline{180^\circ - x}}$$

$$\hat{R} = \underline{\underline{180^\circ - x}} \text{ (teenoorst } \angle \text{ v. kwhk} = 180^\circ)$$

$\therefore PQTR$ is $\parallel^m$ (2 pare teenoorst $\angle$ is gelyk)

- 

of



Bewys dat
AD 'n raaklyn
is aan die
Sirkel.

$$BE = EA$$

(loodlyn uit midp.v.sirkel
na koord)

In $\triangle MEA$: $MA^2 = 3^2 + 4^2$
 $MA = 5$ (Pyth)

In ΔMDA :

$$MD^2 = 13^2 = 169$$

$$MA^2 + AD^2 = 5^2 + 12^2 = 169$$

$$\therefore LK = RK$$

$\therefore MA \perp AD$ (Omgekeerde stelling v. Pyth)

$\therefore AD$ is raaklyn (Radius $\perp$ lyn)