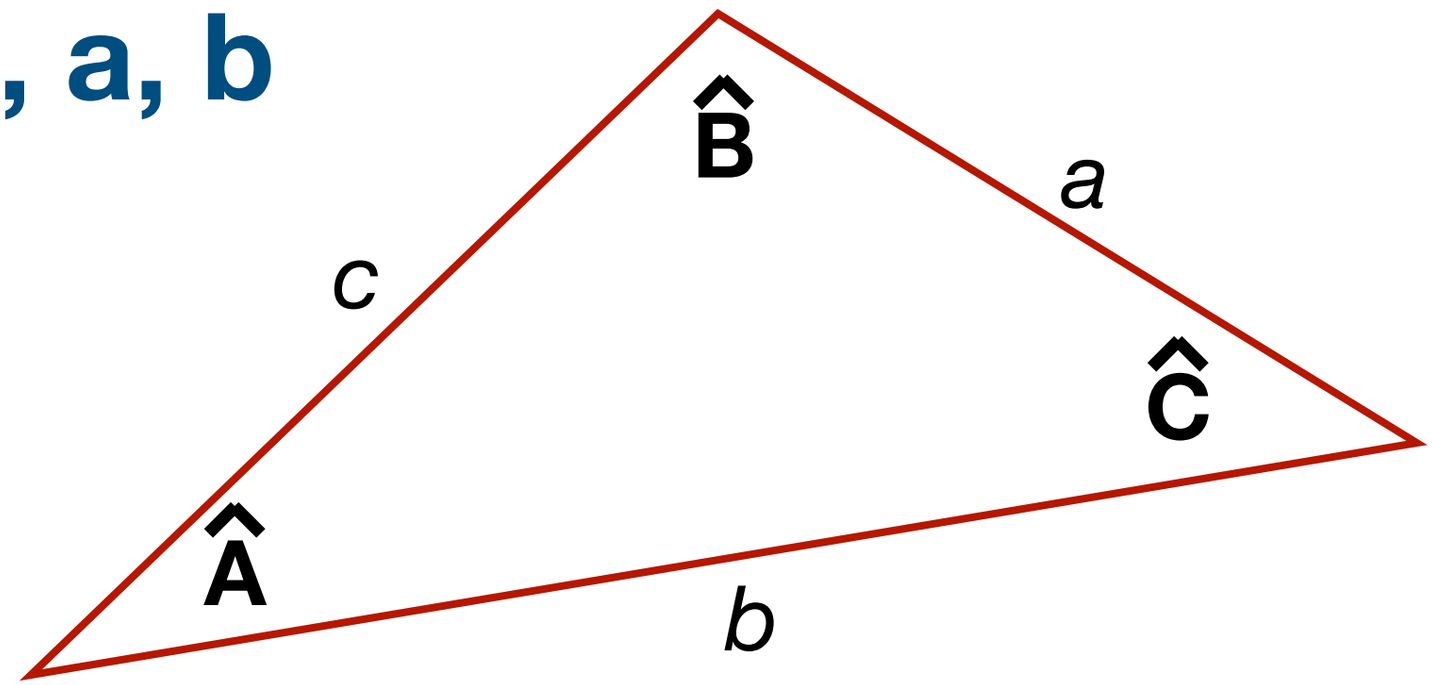
Teorema del sinus

Nombre de solucions

Teorema del sinus

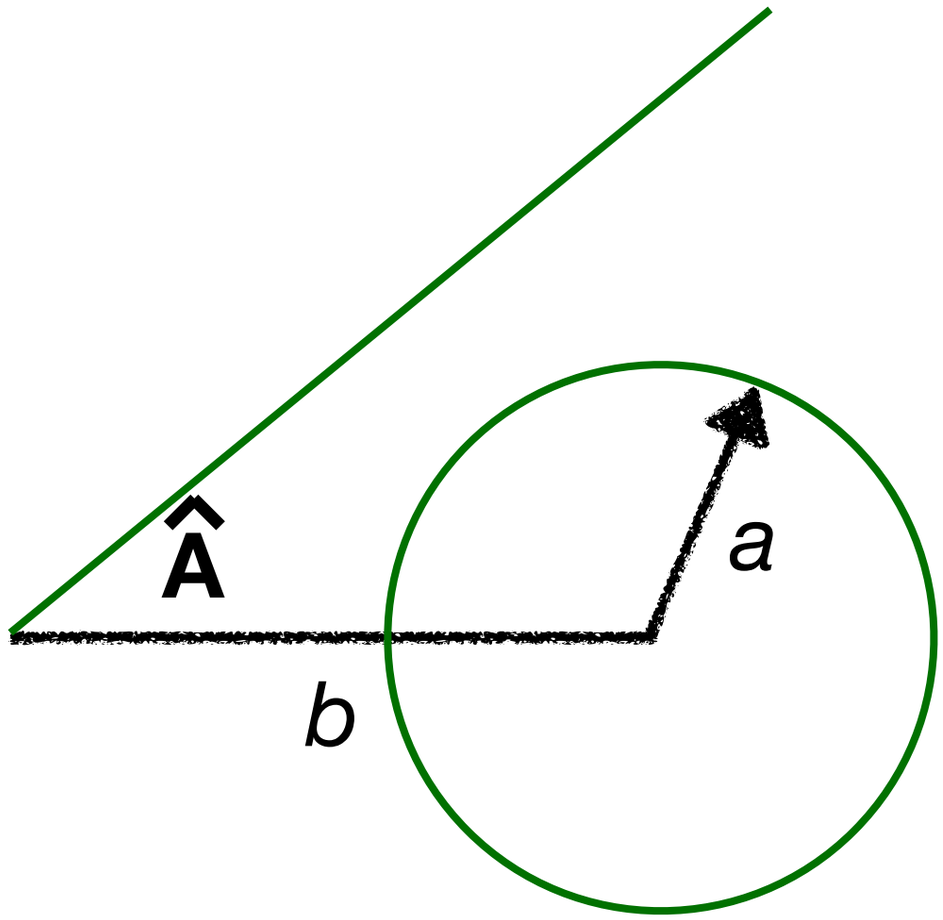
Dades $\hat{A}$, a, b



$$\boxed{\frac{a}{\sin \hat{A}} = \frac{b}{\sin \hat{B}}} = \frac{c}{\sin \hat{C}}$$

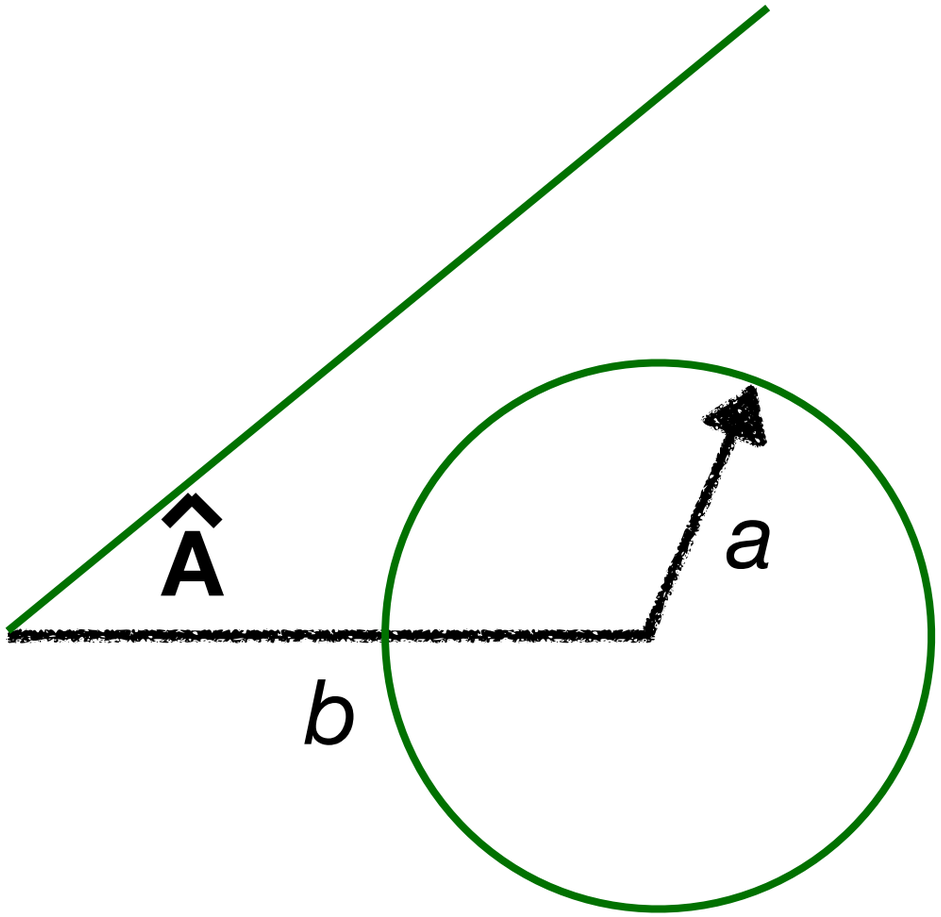
$$\sin \hat{B} = \frac{b \cdot \sin \hat{A}}{a}$$

Cas 1



No té cap solució

Cas 1



No té cap solució

Exemple:

A = 30º

b= 2

a= 0.5

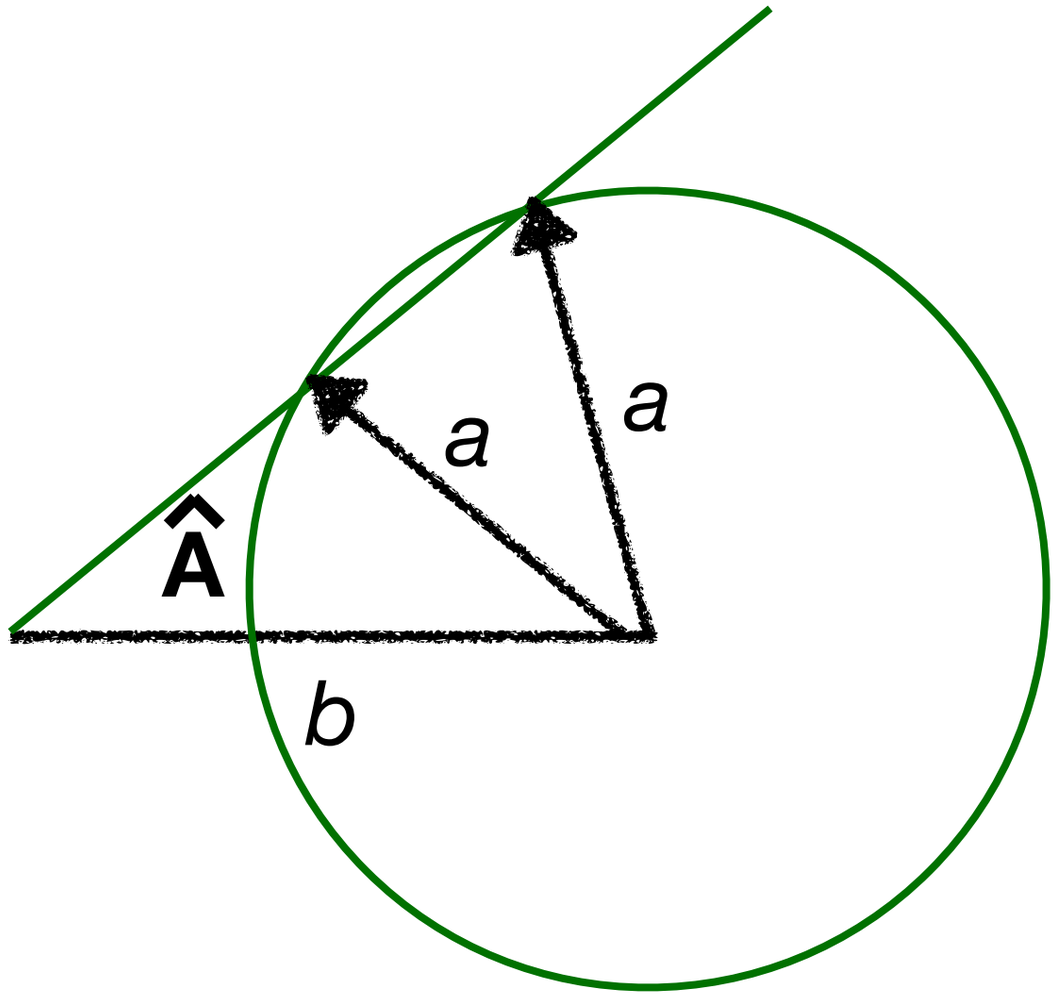
$$\sin \hat{B} = \frac{b \cdot \sin \hat{A}}{a}$$

$$\sin \hat{B} = \frac{2 \cdot \sin 30^\circ}{0.5} = 2$$

Impossible

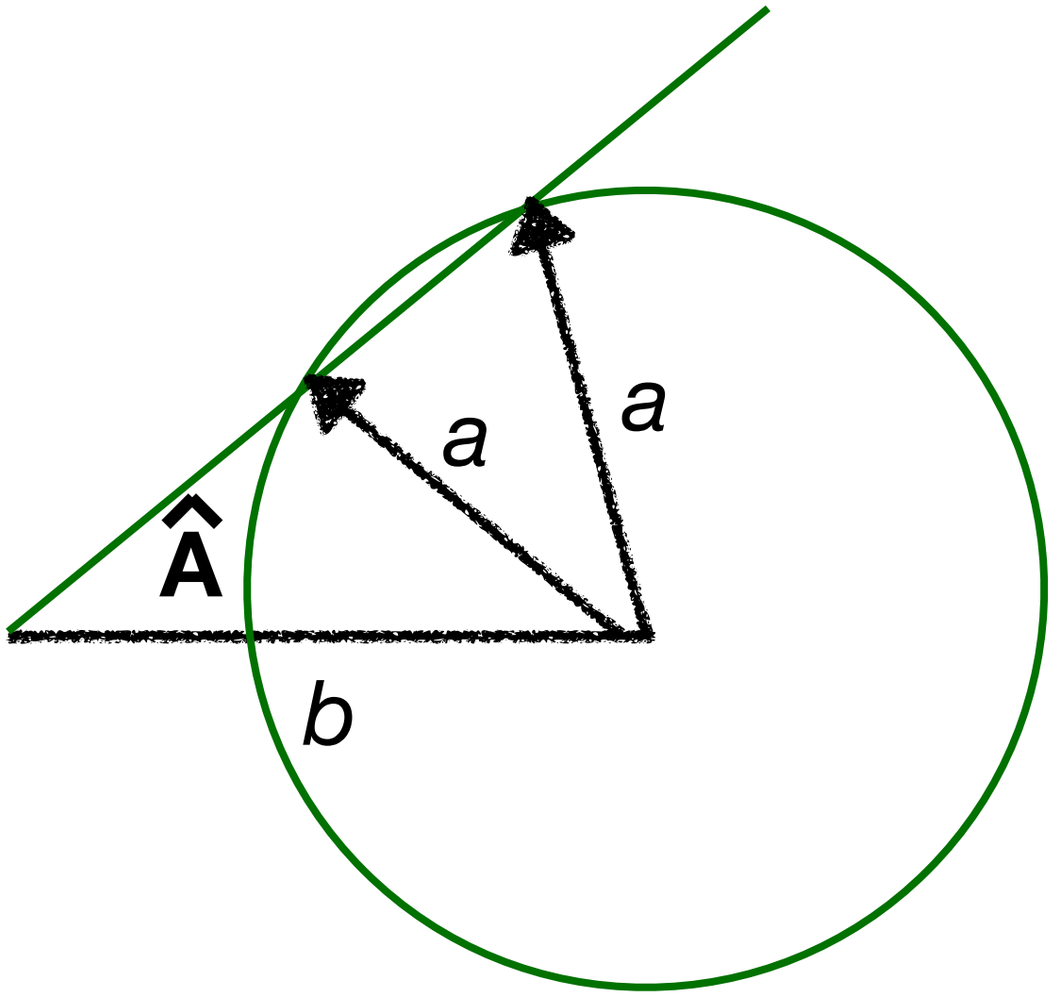
No existeix arcsin 2

Cas 2



Dues solucions

Cas 2



Dues solucions

Exemple:
A = 30º
b= 2
a= 1.1

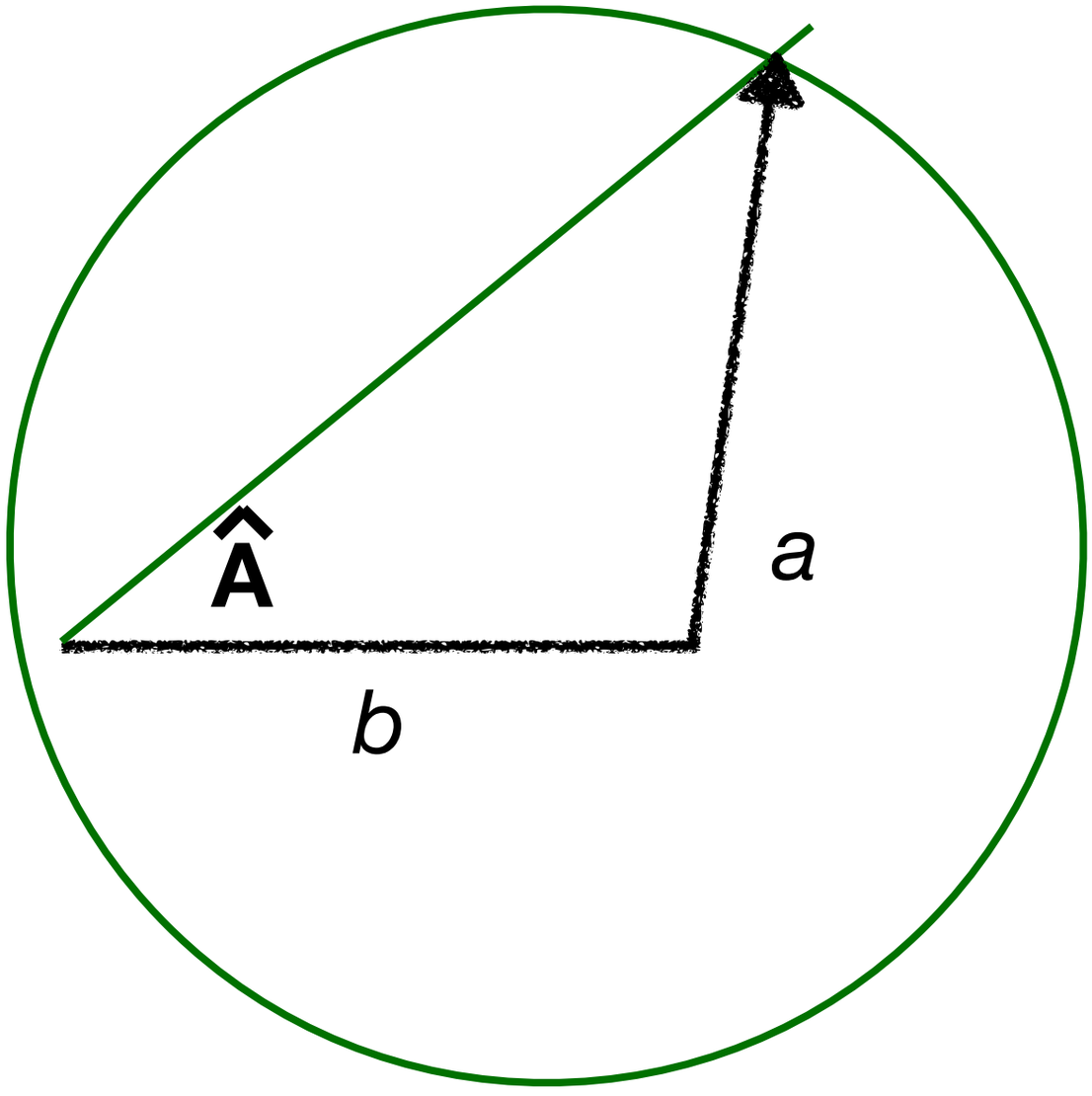
$$\sin \hat{B} = \frac{b \cdot \sin \hat{A}}{a}$$

$$\sin \hat{B} = \frac{2 \cdot \sin 30^\circ}{1.1} = 0.909$$

$$\hat{B} = \arcsin 0.909 = 65,38^\circ$$
$$\hat{B} = 180 - 65,38^\circ = 114,62^\circ$$

$$\hat{C} = 180 - (30 + 65,38) = 84.62^\circ$$
$$\hat{C} = 180 - (30 + 114,62) = 35,38^\circ$$

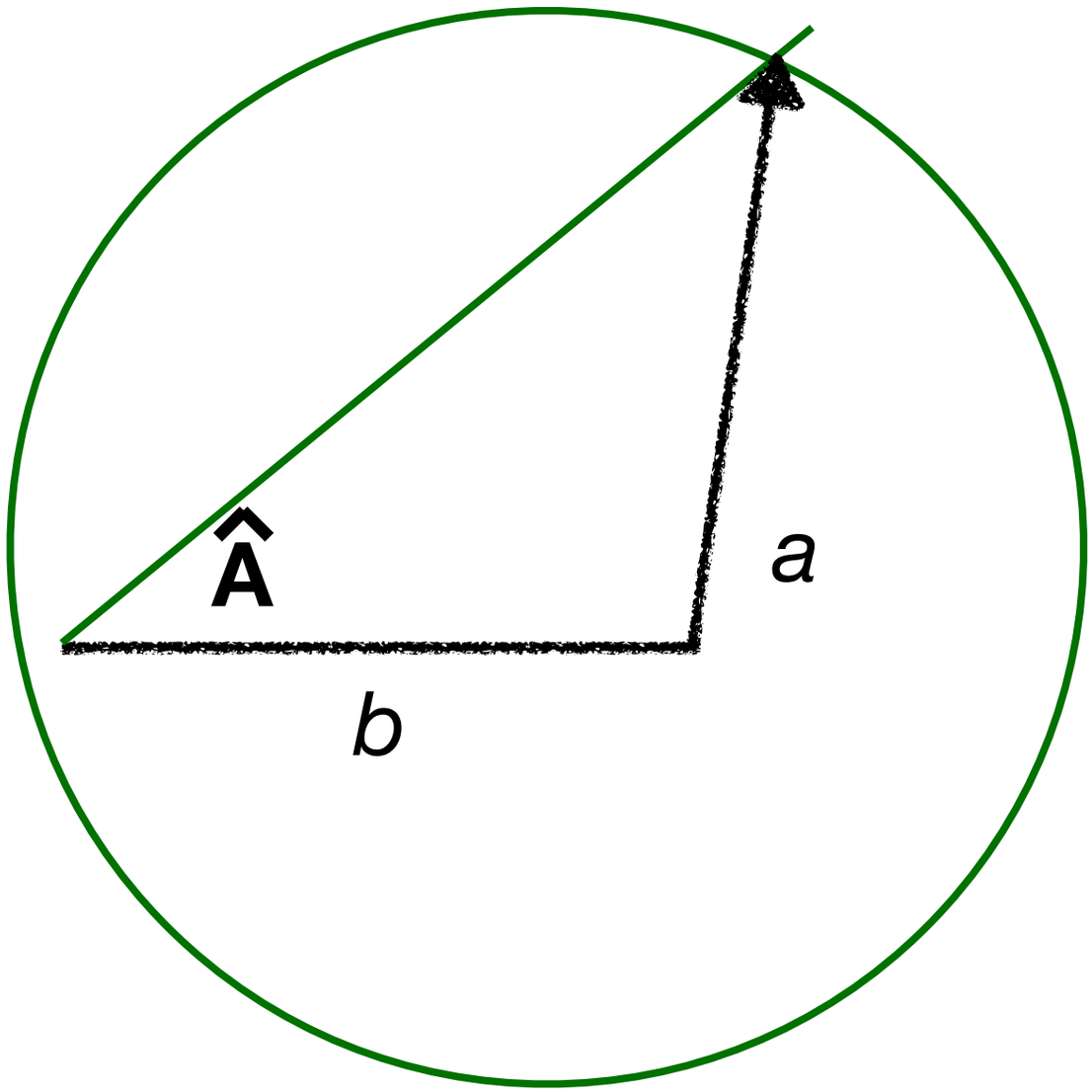
Cas 3



Una solució

Cas 3

Exemple:
A = 30º
b= 2
a= 4



Una solució

$$\sin \hat{B} = \frac{b \cdot \sin \hat{A}}{a}$$

$$\sin \hat{B} = \frac{2 \cdot \sin 30^\circ}{4} = 0.25$$

$$\hat{B} = \arcsin 0.25 = 14,48^\circ$$

$$\hat{B} = 180^\circ - 14,48^\circ = 165,52^\circ$$

$$\hat{C} = 180 - (30 + 14,48) = 135,52^\circ$$

$$\hat{C} = 180 - (30 + 165,52) = -15,52^\circ$$