GEOMETRÍA

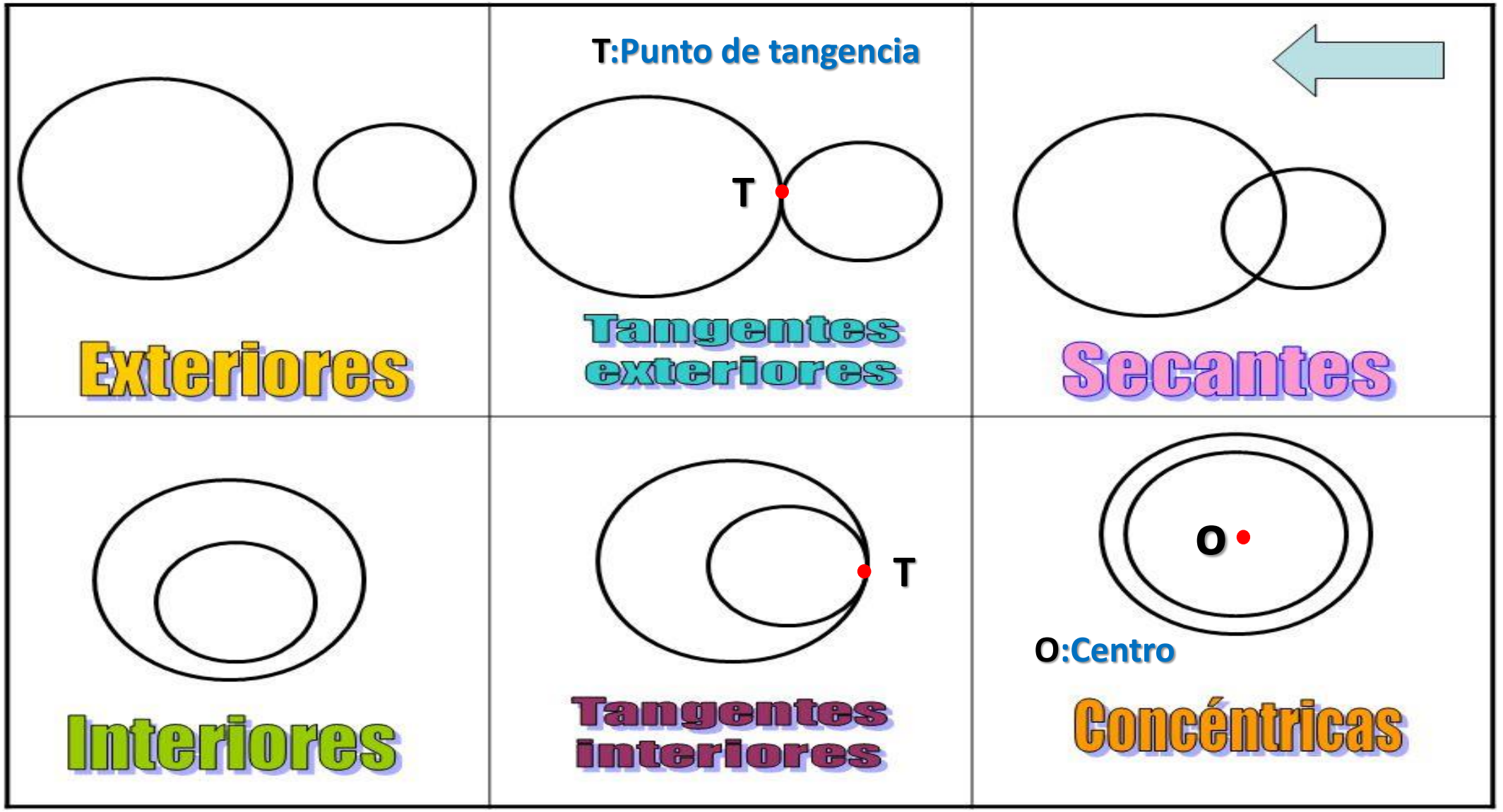
Capítulo 16

1st

SECONDARY

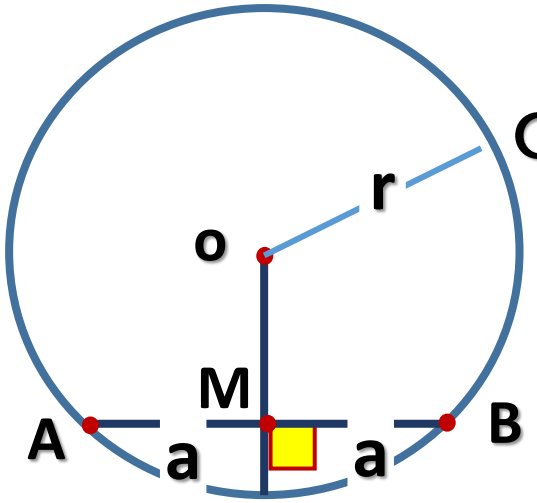
Líneas asociadas a la circunferencia

SACO OLIVEROS

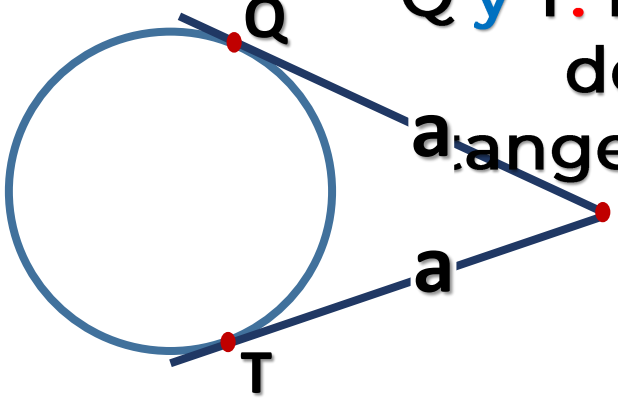

Exteriores
T:Punto de tangencia
T
Tangentes exteriores
Secantes
Interiores
T
Tangentes interiores
O
O:Centro
Concéntricas

Líneas asociadas a la circunferencia

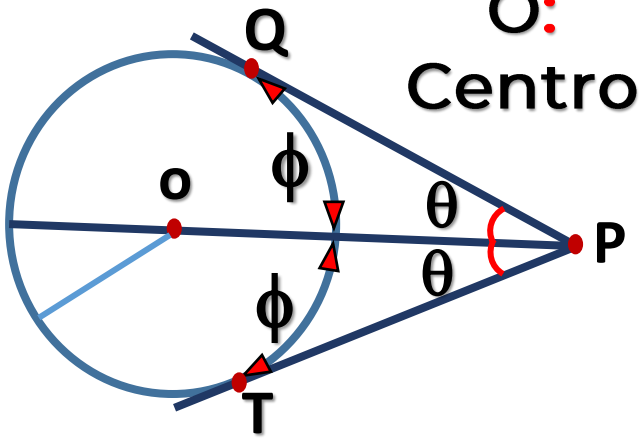
TEOREMAS



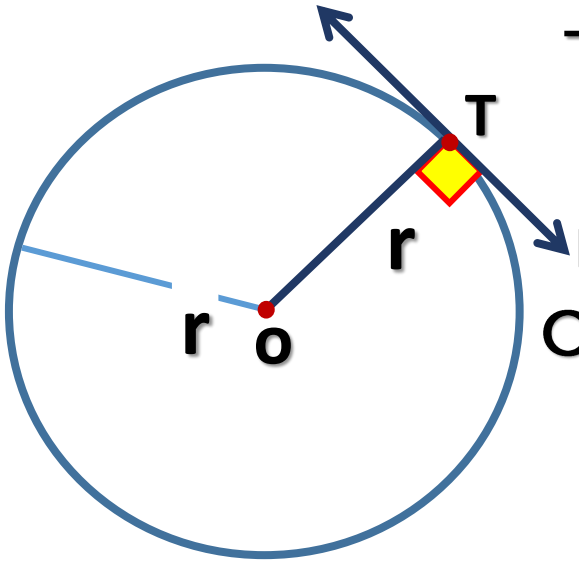
O: Centro



Q y T: Punto de tangencia

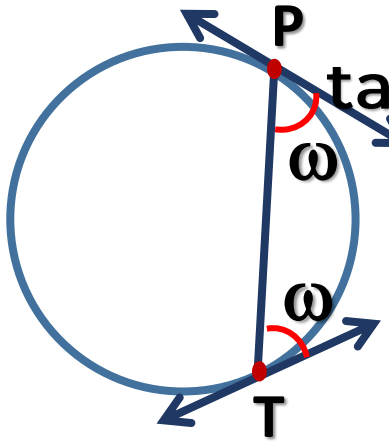


O: Centro



T: Punto de tangencia

O: Centro

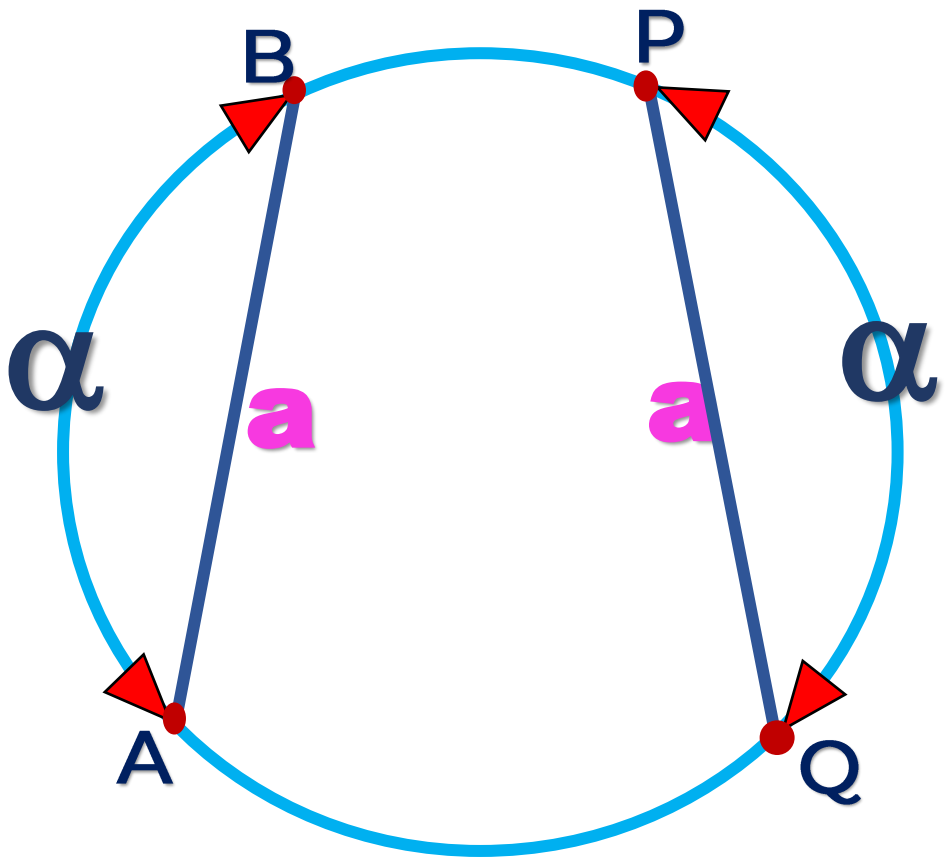


P y T: Punto de tangencia

$$\phi + \theta = 90°$$

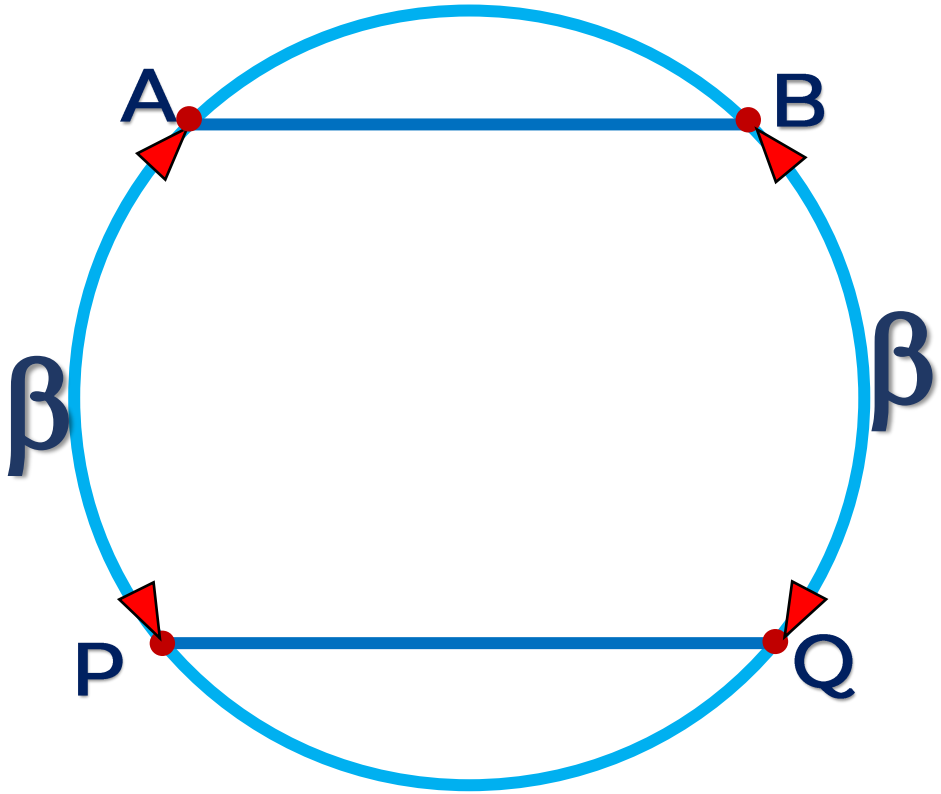
Si: $AB = PQ$

$\Leftrightarrow \overset{\frown}{mAB} = \overset{\frown}{mPQ}$



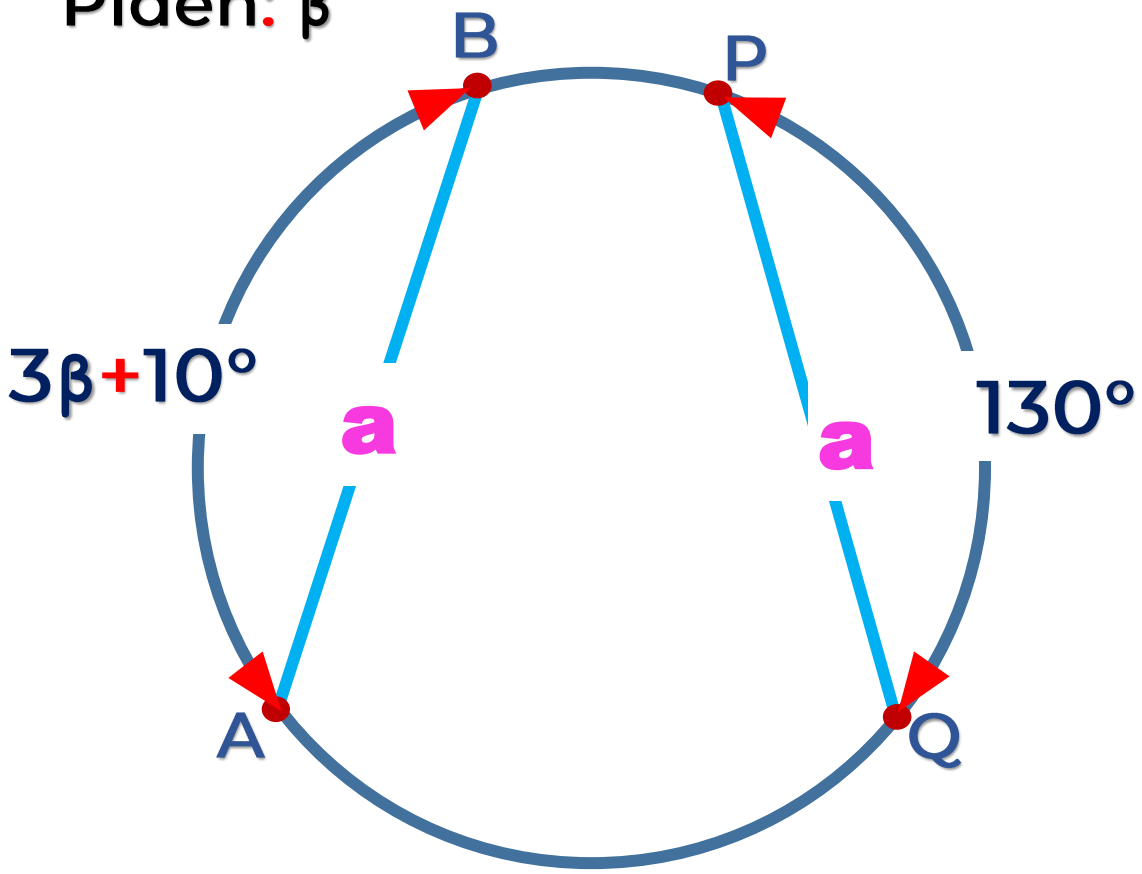
Si: $\overline{AB} // \overline{PQ}$

$\Leftrightarrow \overset{\frown}{mAP} = \overset{\frown}{mBQ}$



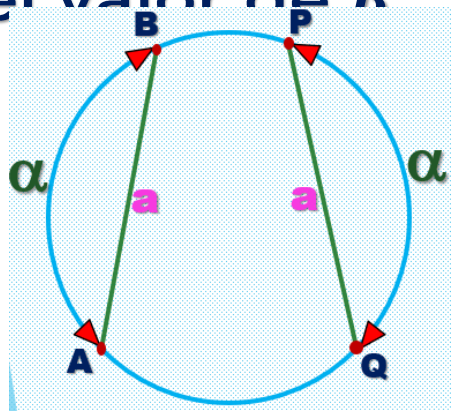
1. Se tiene una circunferencia y se trazan las cuerdas $\overline{AB}$ y $\overline{PQ}$. Si $m\overset{\frown}{AB} = 3\beta+10°$, $m\overset{\frown}{PQ} = 130°$ y $AB = PQ$, halle el valor de β.

Piden: β



Teorema

Si: $AB = PQ$



$m\overset{\frown}{AB} = m\overset{\frown}{PQ}$

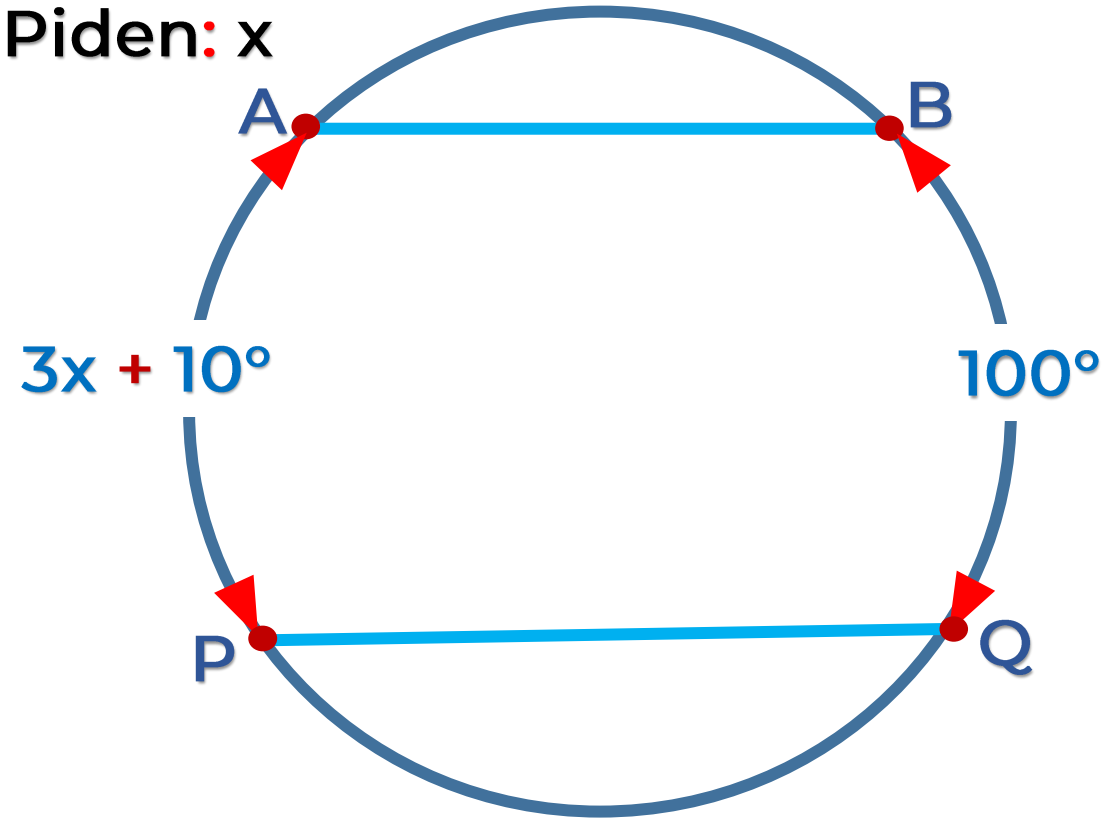
$3\beta + 10° = 130°$

$3\beta = 120°$

$\beta = 40°$

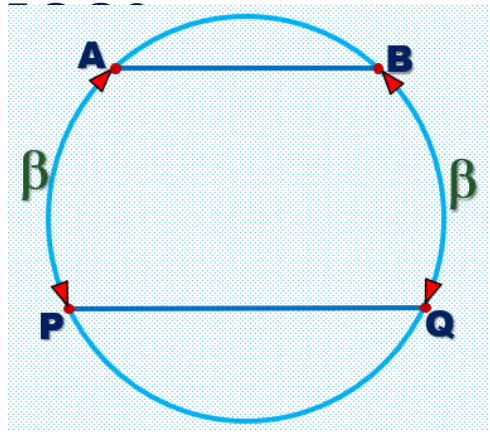
2. En una circunferencia y se trazan las cuerdas paralelas AB y PQ. Si mAP = 3x + 10° y mBQ = halle el valor de x.

Piden: x



Teorema

Si: $\overline{AB} \parallel \overline{PQ}$



$\Rightarrow$ $m\overset{\frown}{AP} = m\overset{\frown}{BQ}$

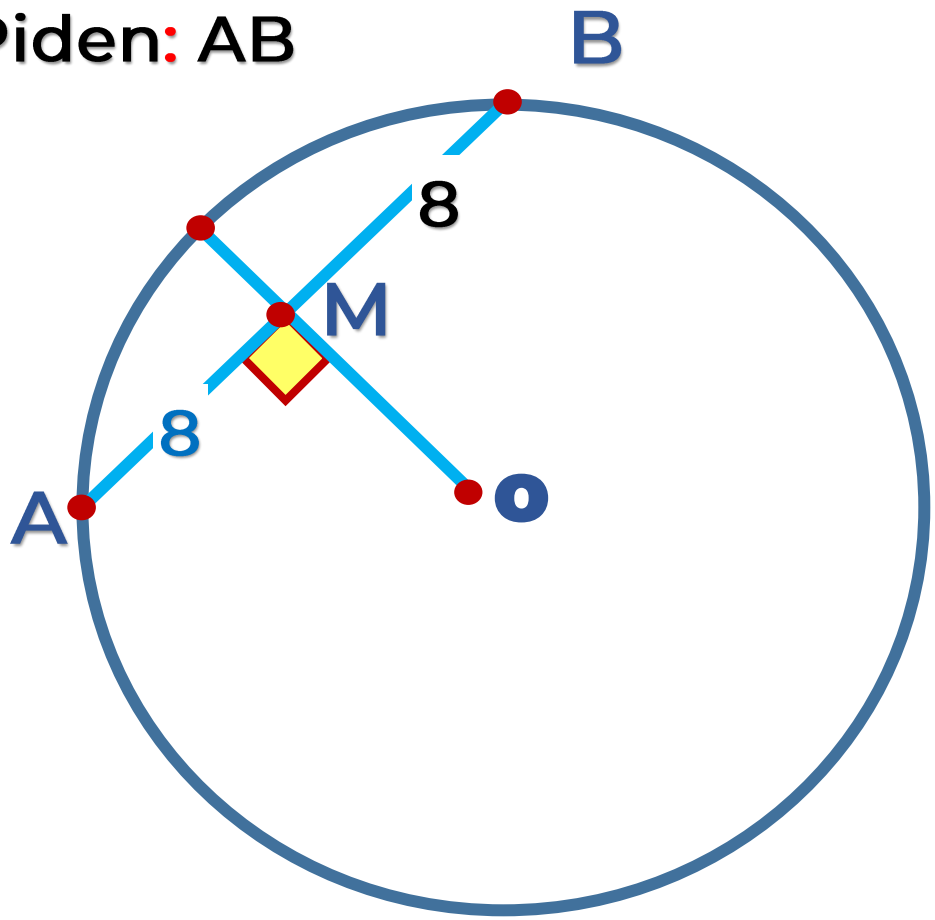
$3x + 10° = 100°$

$3x = 90°$

x = 30°

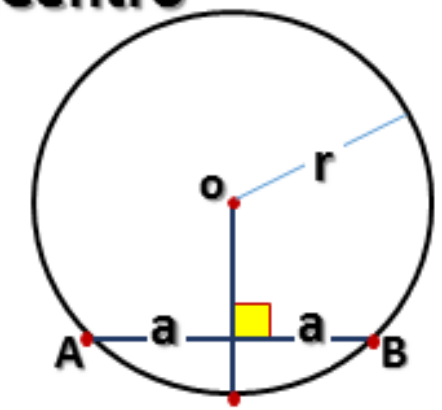
3. Si O es centro y AM = 8, halle AB.

Piden: AB



Teorema

O:Centro



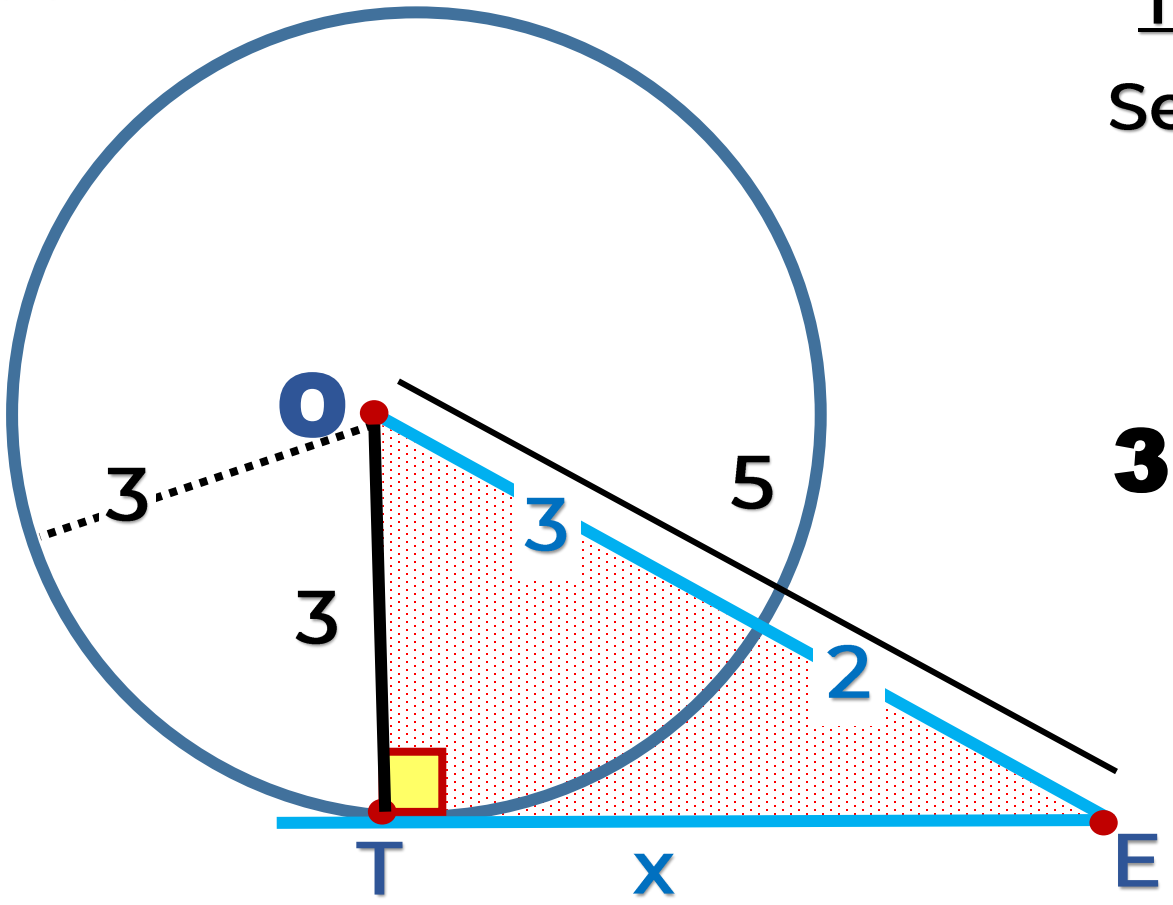
AM = MB = 8

AB = 8 + 8

AB = 16

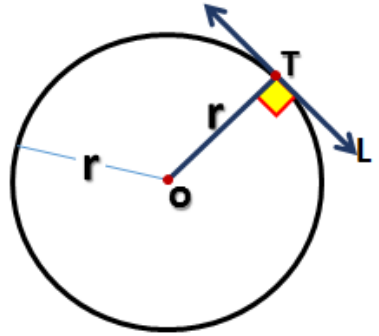
4. En la figura, O es centro y T punto de tangencia. Halle el valor de *x*.

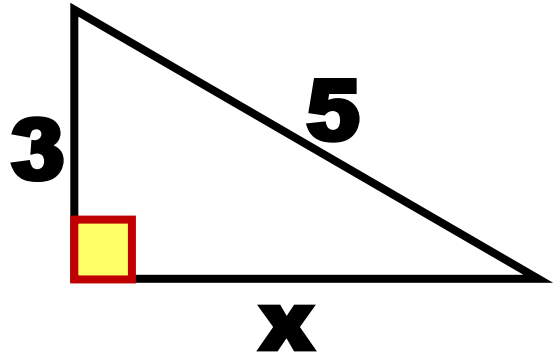
Piden: x



Teorema

Se traza $\overline{OT}$ (Radio)





$5^2 = 3^2 + x^2$

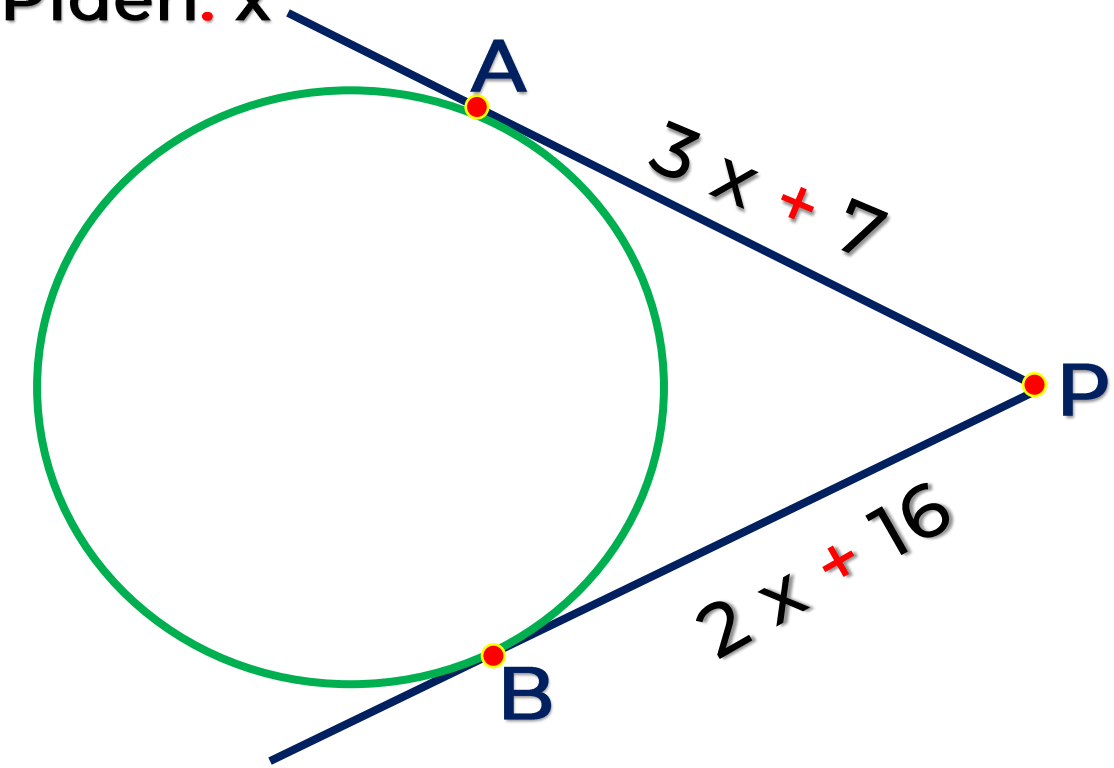
$25 = 9 + x^2$

$16 = x^2$

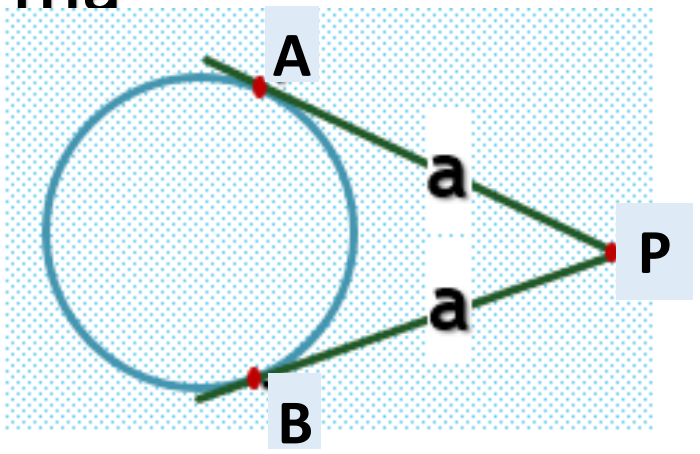
$x = 4$

5. En un punto P exterior a una circunferencia se trazan los segmentos tangentes PA y PB. Si PA= 3x+7 y PB= 2x+16, halle el valor de *x*.

Piden: x



Teore
ma



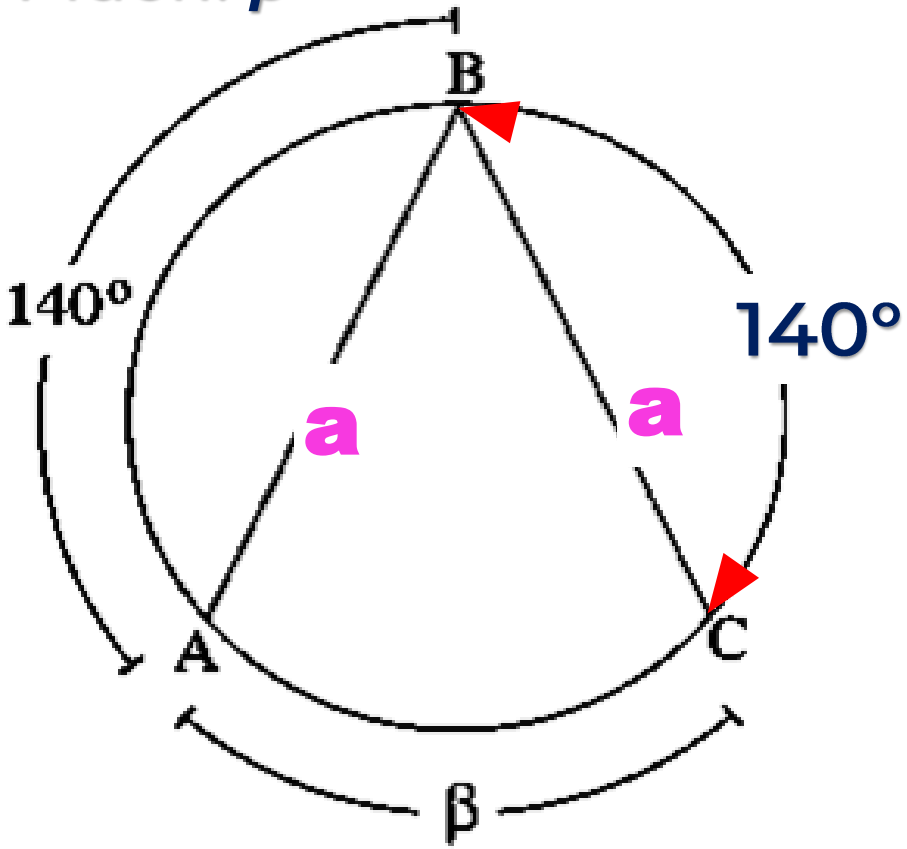
AP = PB

3x + 7 = 2x + 16

x = 9

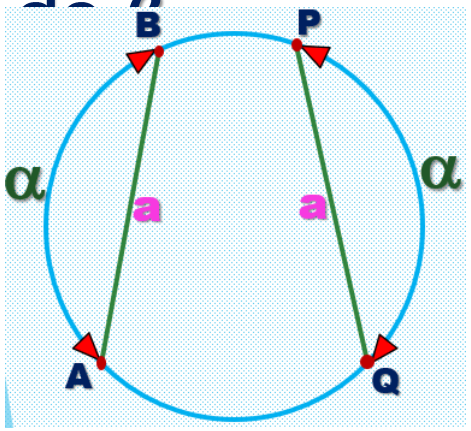
6. Del gráfico, si AB = BC, halle el valor de β

Piden: β



Teorema

Si: AB = BC



$\overset{\frown}{m}AB = \overset{\frown}{m}BC$

$\overset{\frown}{m}BC = 140°$

En la circunferencia

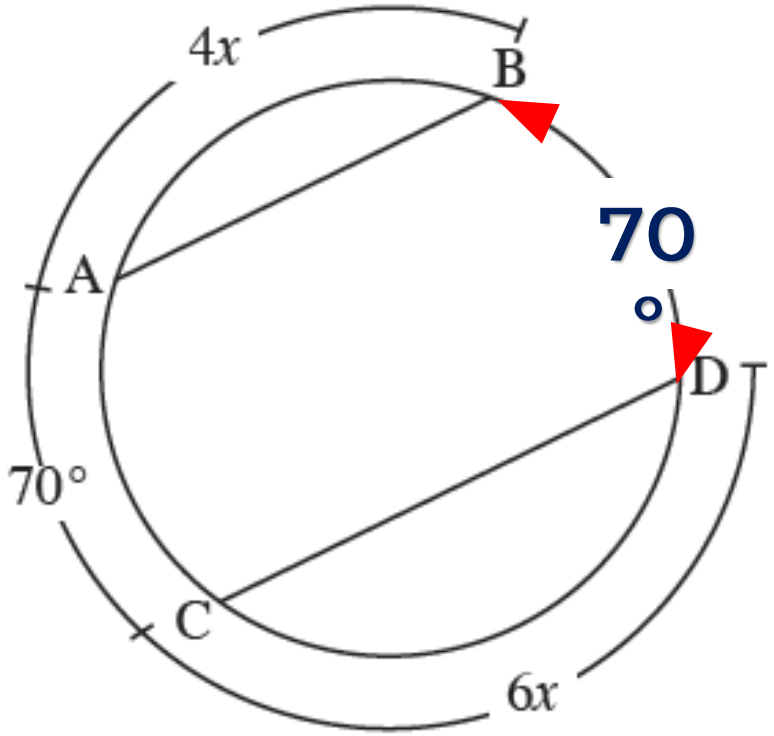
$140° + 140° + \beta = 360°$

$280° + \beta = 360°$

$\beta = 80°$

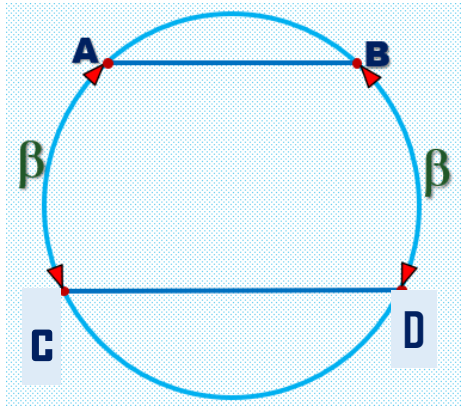
7. En la siguiente figura, $\overline{AB}$ // $\overline{CD}$. Halle *x*.

Piden: x



Teorema

Si: $\overline{AB}$ // $\overline{CD}$



$m\overset{\frown}{AC} = m\overset{\frown}{BD}$

$m\overset{\frown}{BD} = 70°$

En la circunferencia

$70° + 4x + 70° + 6x = 360°$

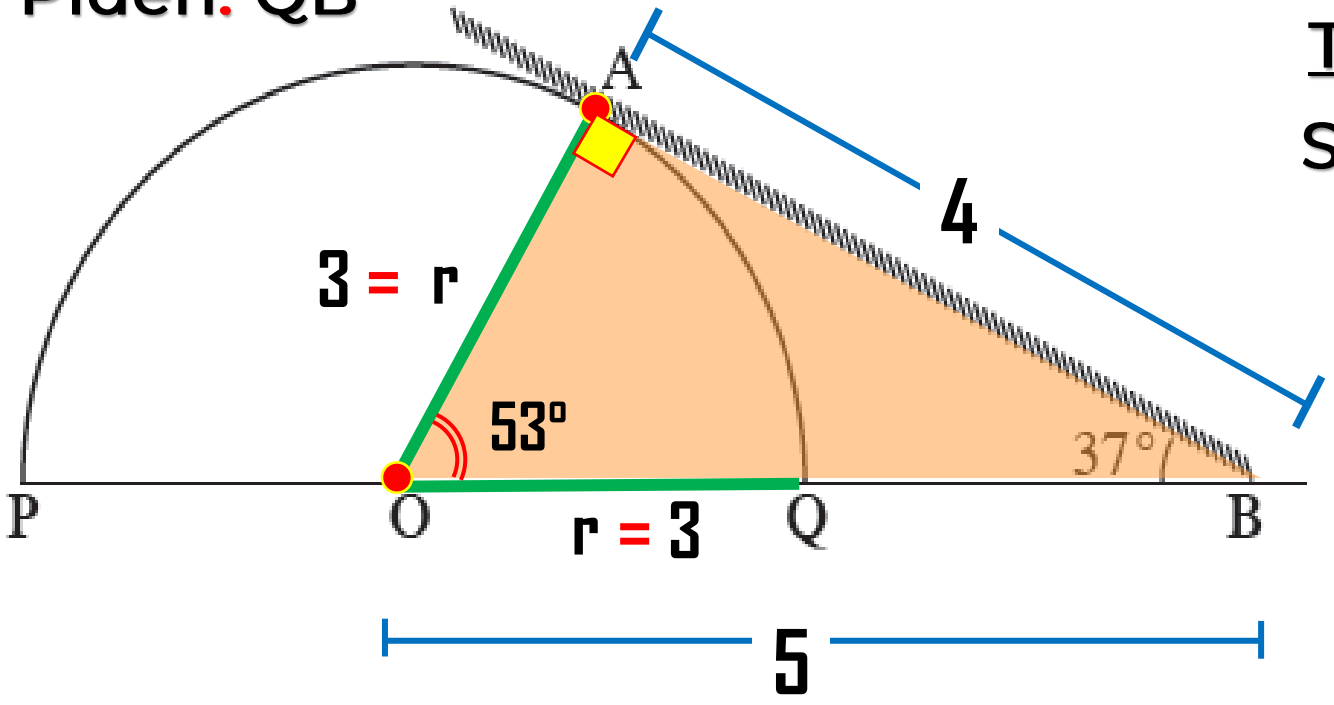
$140° + 10x = 360°$

$10x = 220°$

$x = 22°$

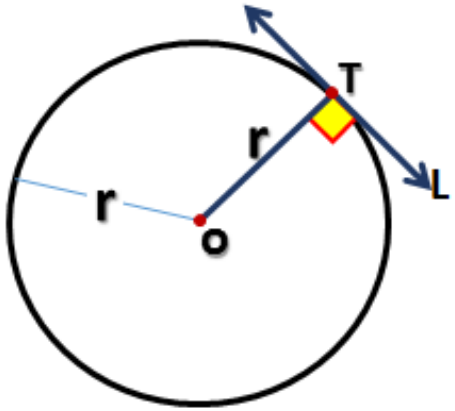
8. Se muestra una varilla AB. Si AB = 4, halle la distancia QB.

Piden: QB



Teorema

Se traza $\overline{OA}$ (radio)



En el ⊿ OAB (Notable 37° - 53°)

- OA = OQ = r = 3
- OB = 5

$OB = OQ + QB$

$5 = 3 + QB$

$QB = 2$