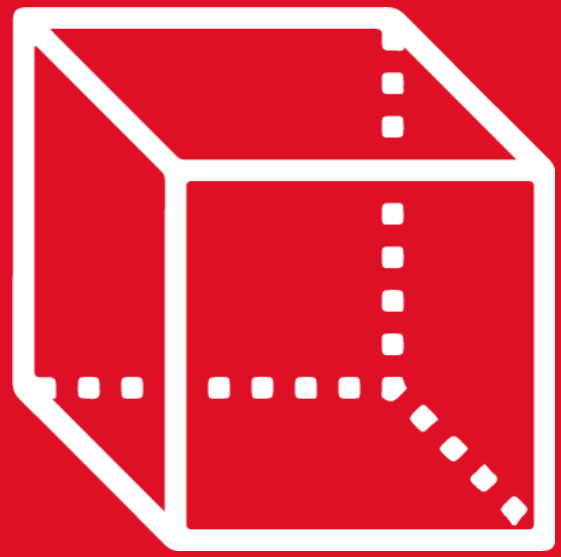
GEOMETRÍA

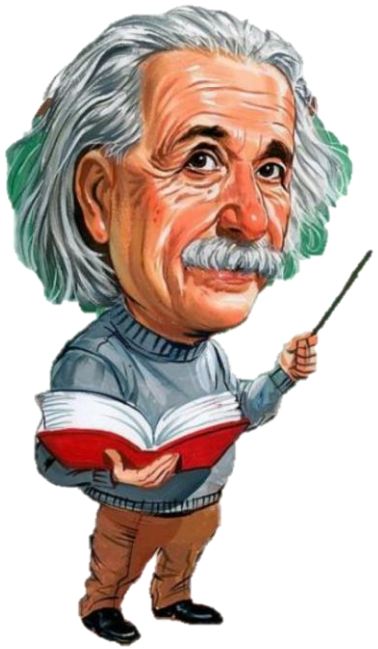
Capítulo 14

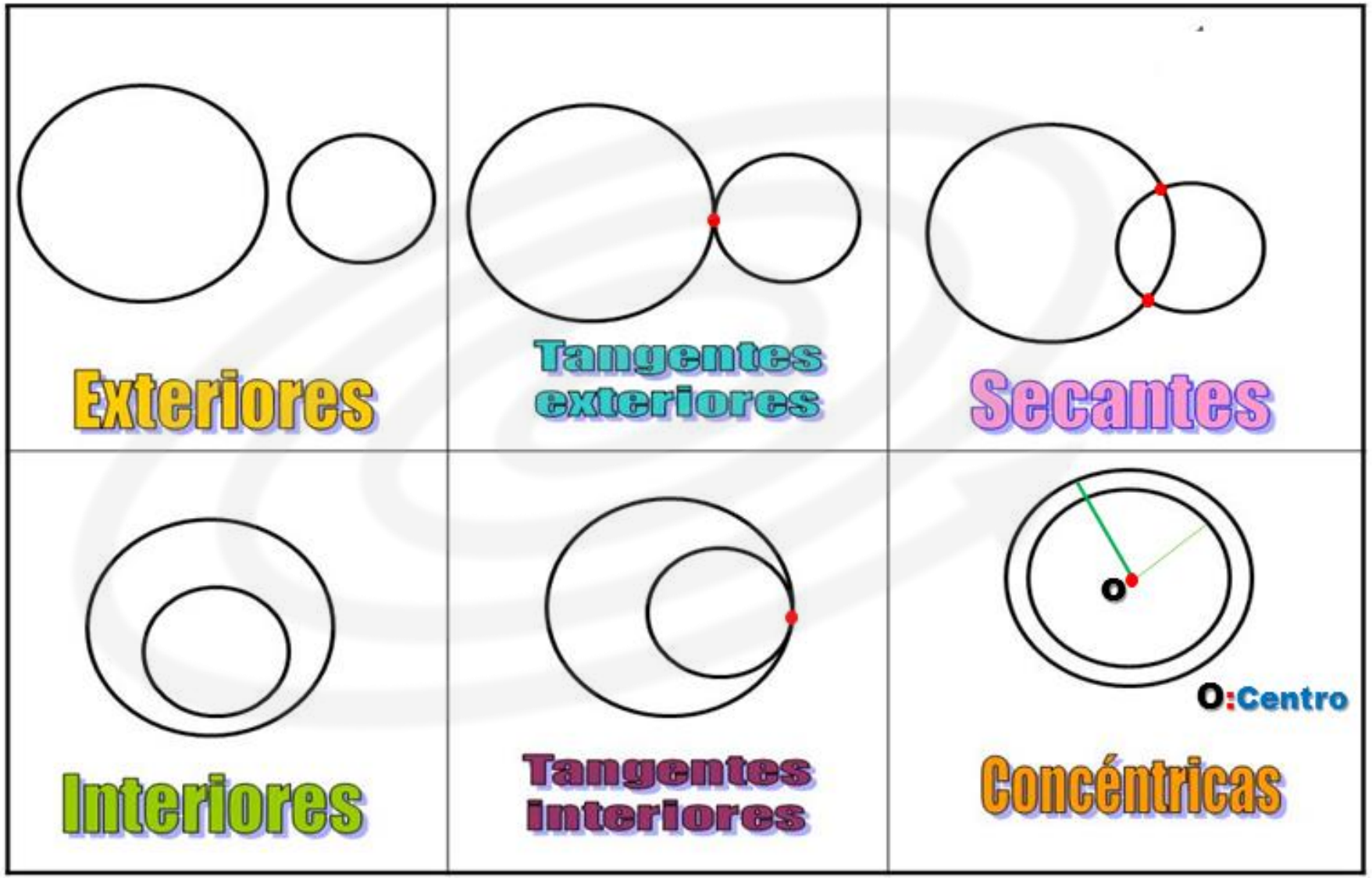


2st
SECONDARY

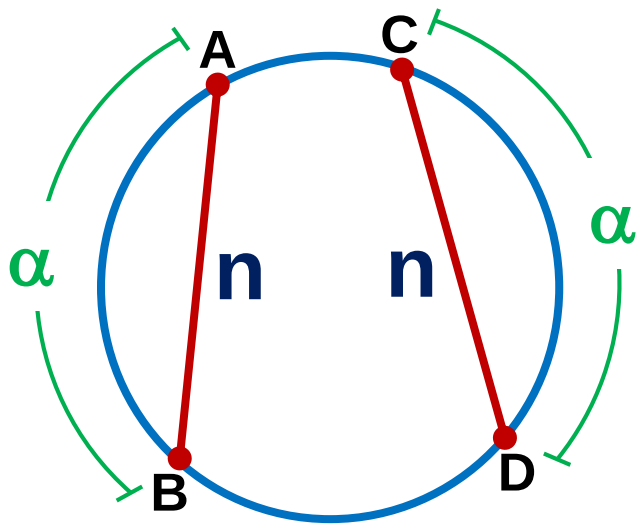
Circunferencia II

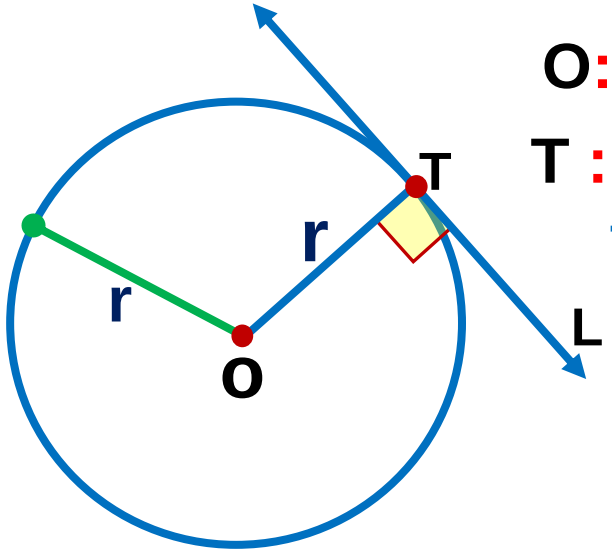
SACO OLIVEROS




Exteriores
Tangentes exteriores
Secantes
Interiores
Tangentes interiores
O
O:Centro
Concéntricas

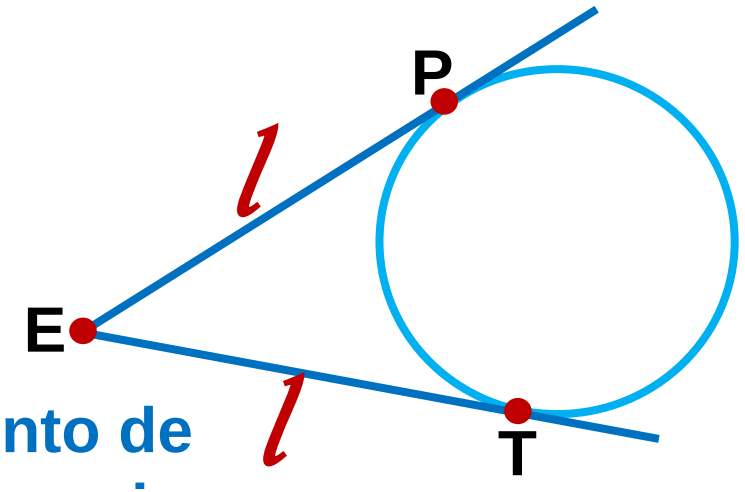
Líneas asociadas a la circunferencia



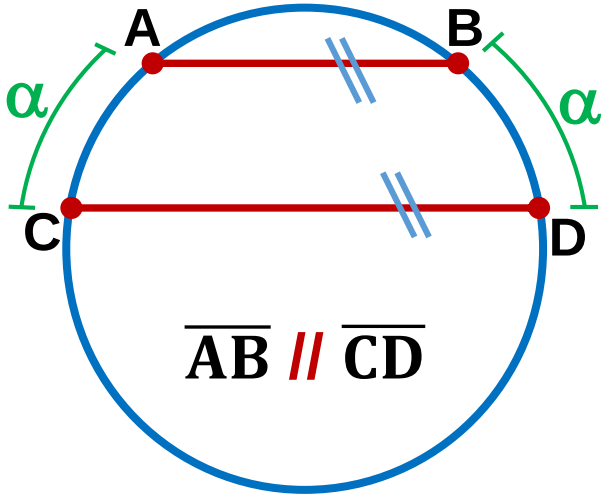


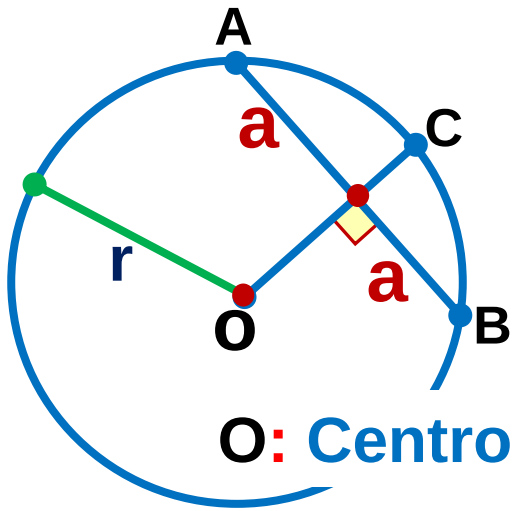
O: Centro

T : Punto de tangencia

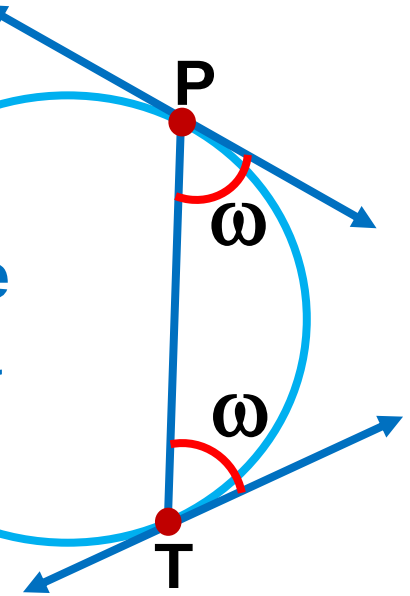


P y T: Punto de tangencia



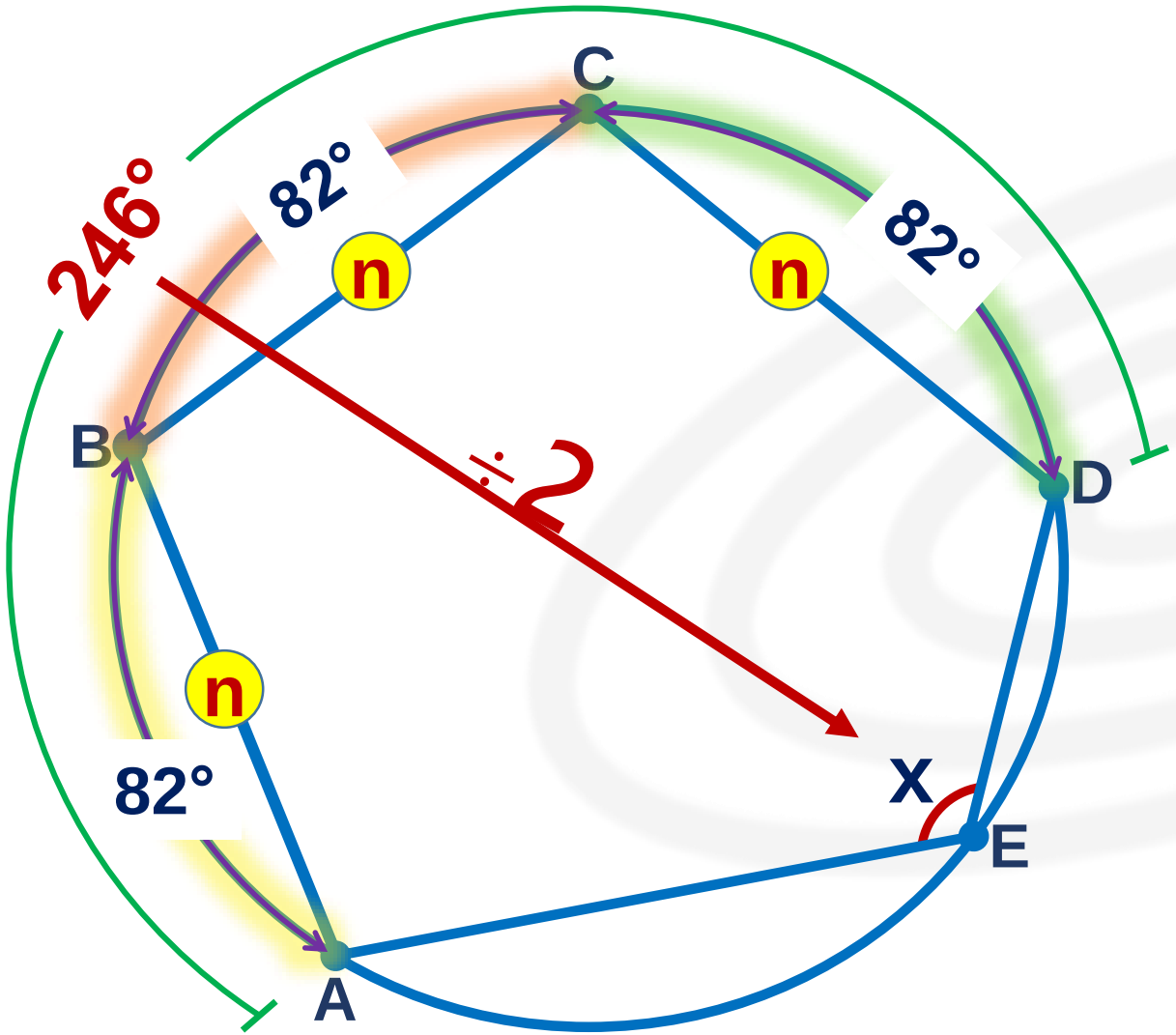


O: Centro



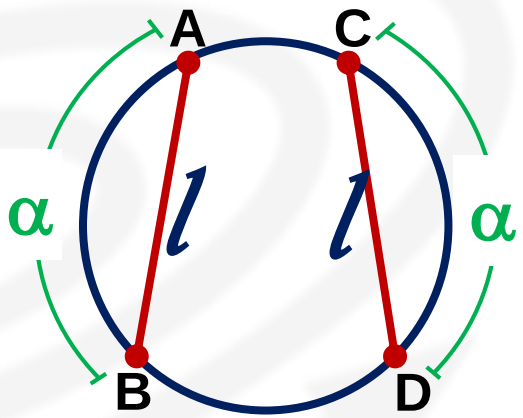
P y T: Punto de tangencia

1. Si AB = BC = CD y la $m\widehat{AB}=82°$, halle el valor de x.

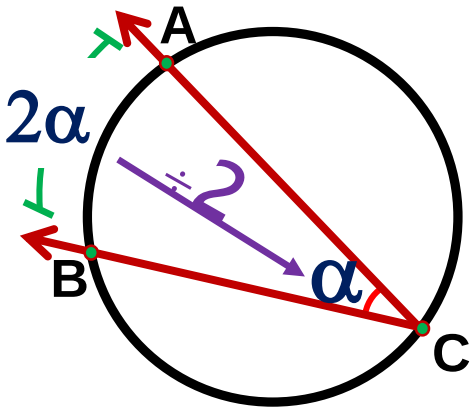


Resolución

- Piden: x



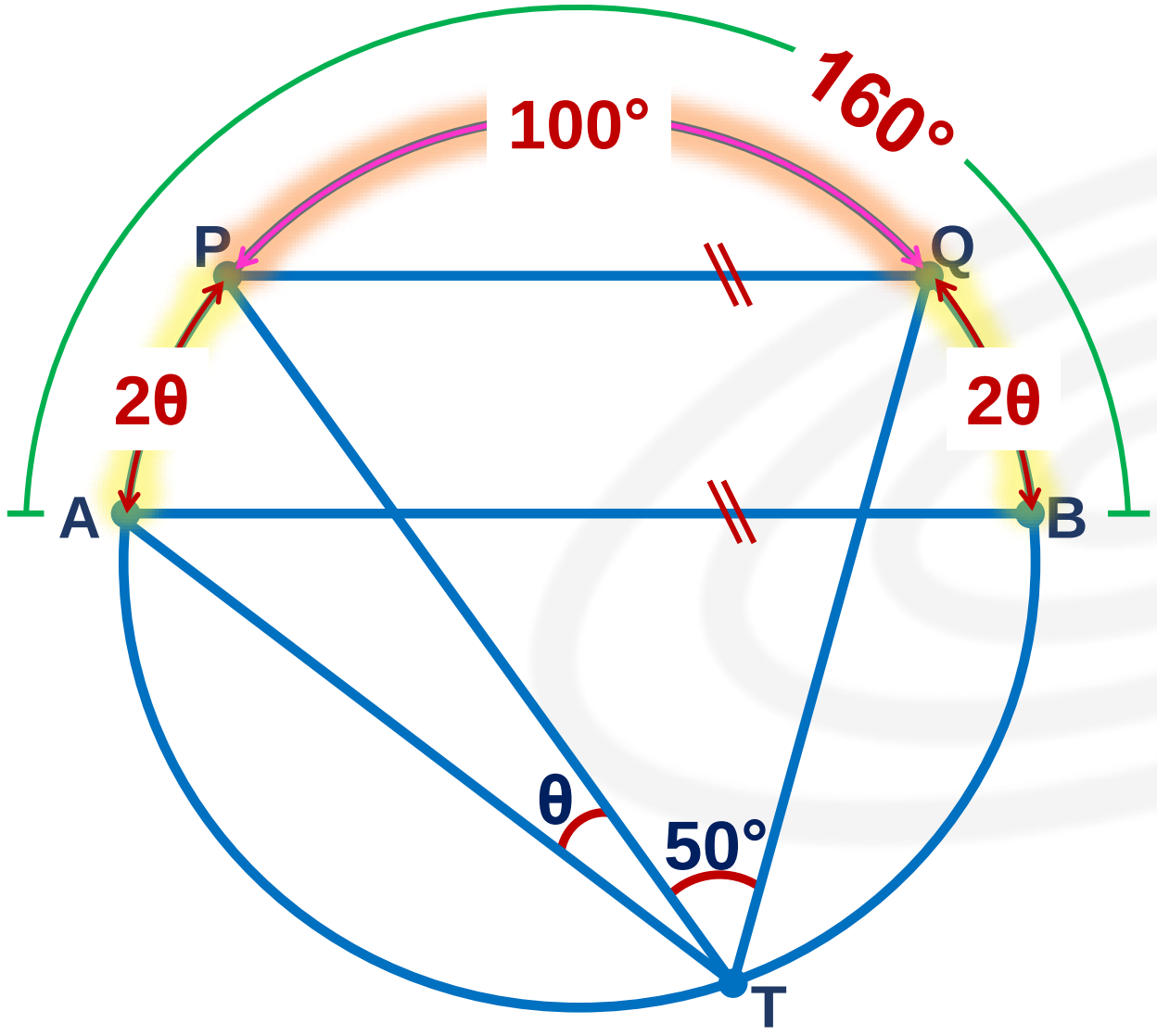
ÁNGULO INSCRITO:



- $m\widehat{AB} = m\widehat{BC} = m\widehat{CD} = 82°$
- $m\widehat{AD} = (82°)3 = 246°$
- Luego:

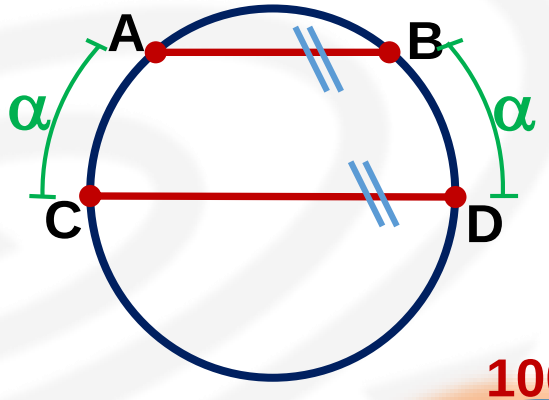
x = 123°

2. Si $\overline{PQ} \parallel \overline{AB}$ y la $m\overset{\frown}{APQB} = 160°$, halle el valor de θ.

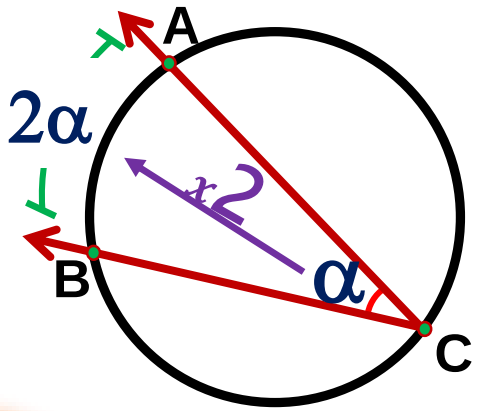


Resolución

- Piden: θ



ÁNGULO INSCRITO:



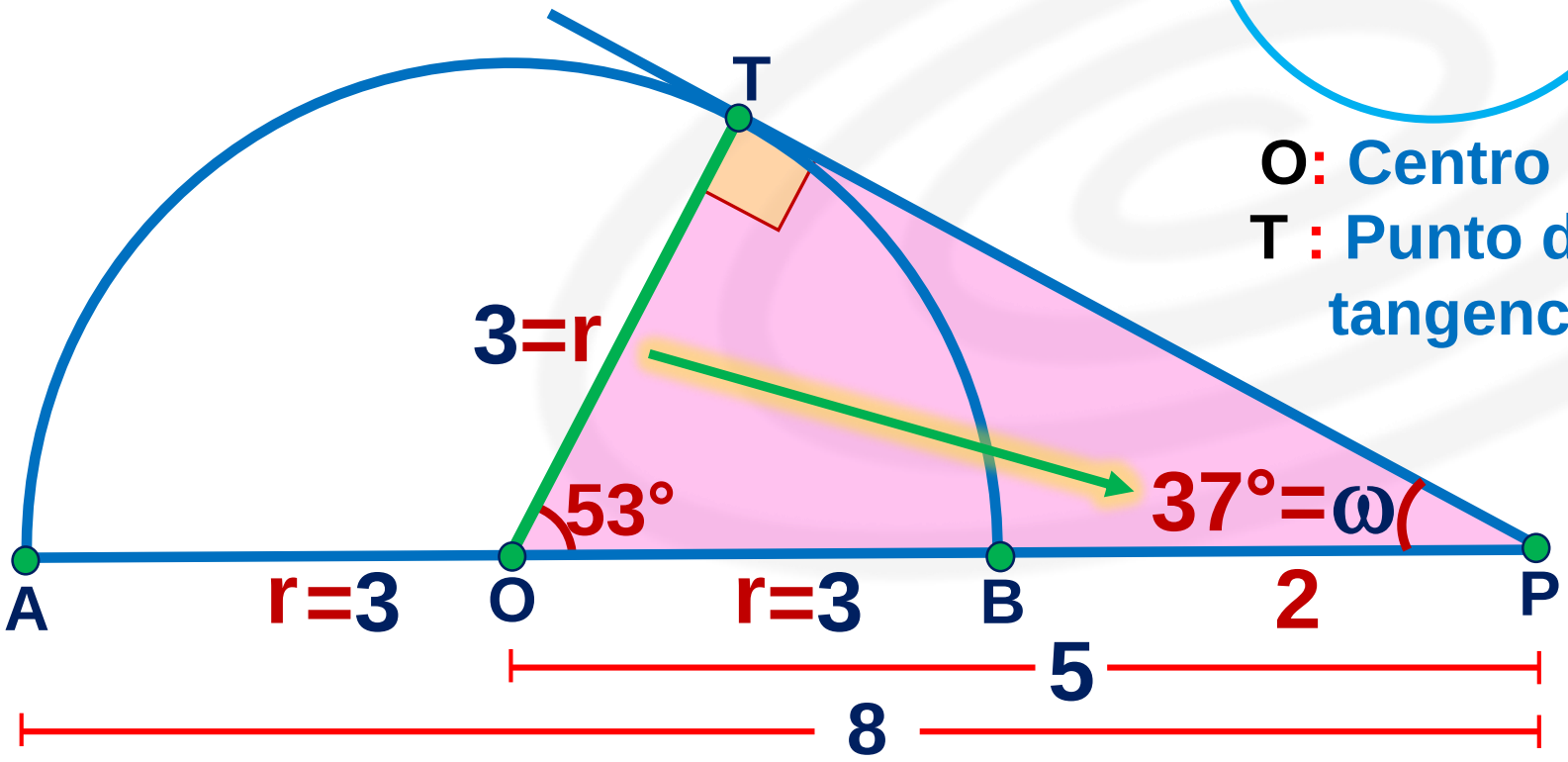
- Del gráfico:

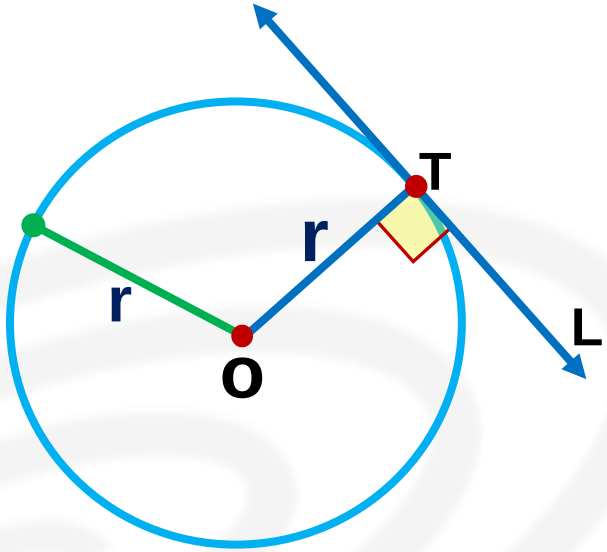
$$2\theta + 100° + 2\theta = 160°$$

$$4\theta = 60°$$

$$\theta = 15°$$

3. En la semicircunferencia de centro O, T es punto de tangencia, PA = 8 cm y PB = 2 cm. Halle el valor de ω.





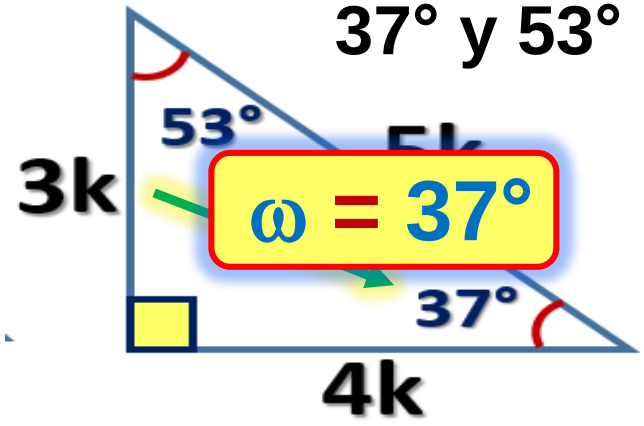
O: Centro
T : Punto de tangencia

Resolución

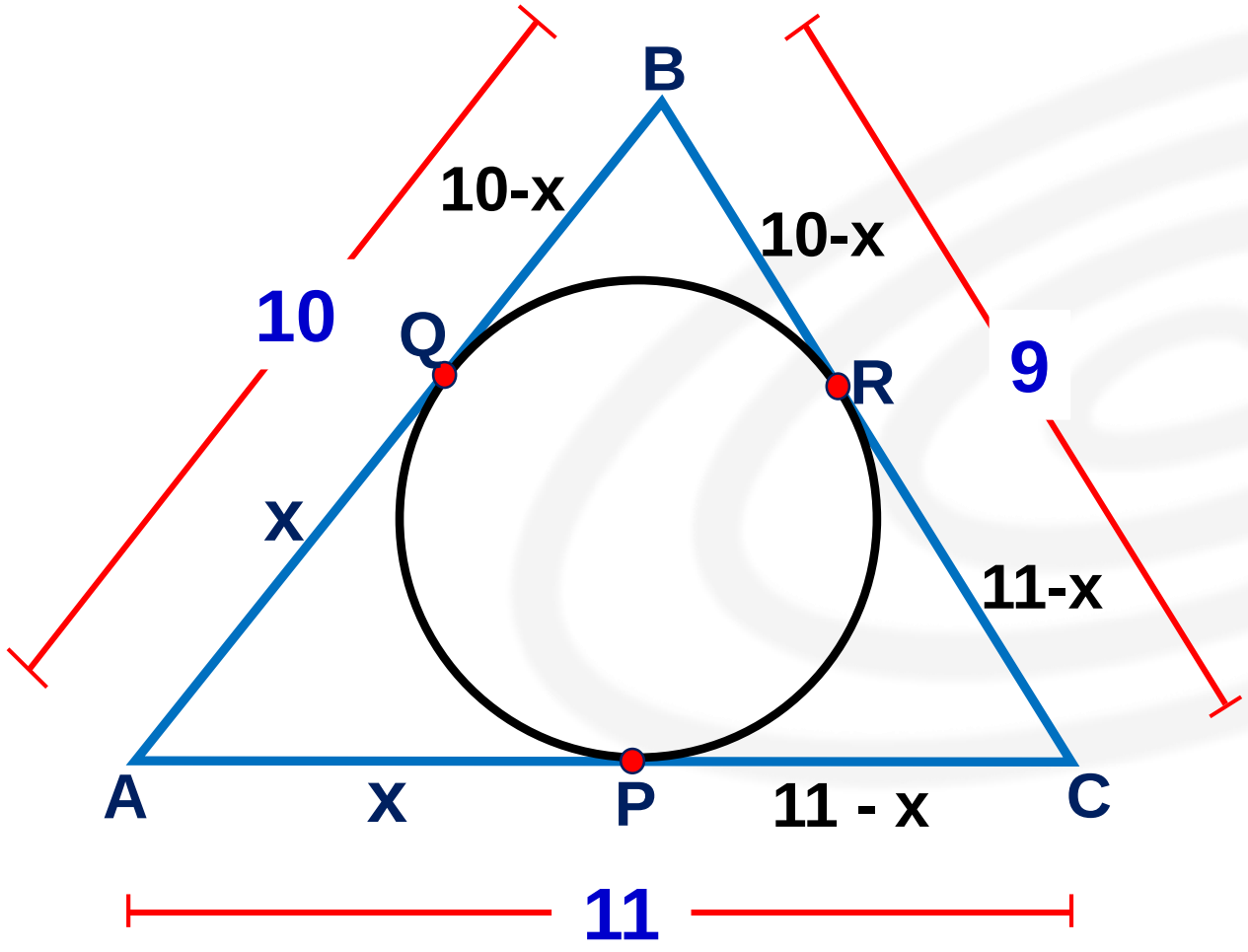
- Piden: ω
- En $\overline{AP}$:

$$r + r + 2 = 8$$
$$r = 3$$

- Trazamos $\overline{OT}$
- ⊿OTP: Notable 37° y 53°

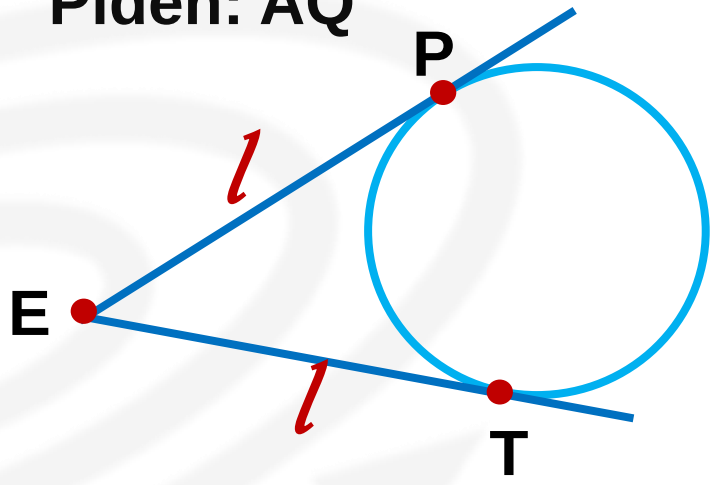


4. En la figura, P, Q y R son puntos de tangencia; AB = 10 cm, BC = 9 cm y AC = 11 cm. Calcule AQ.



Resolución

- Piden: AQ



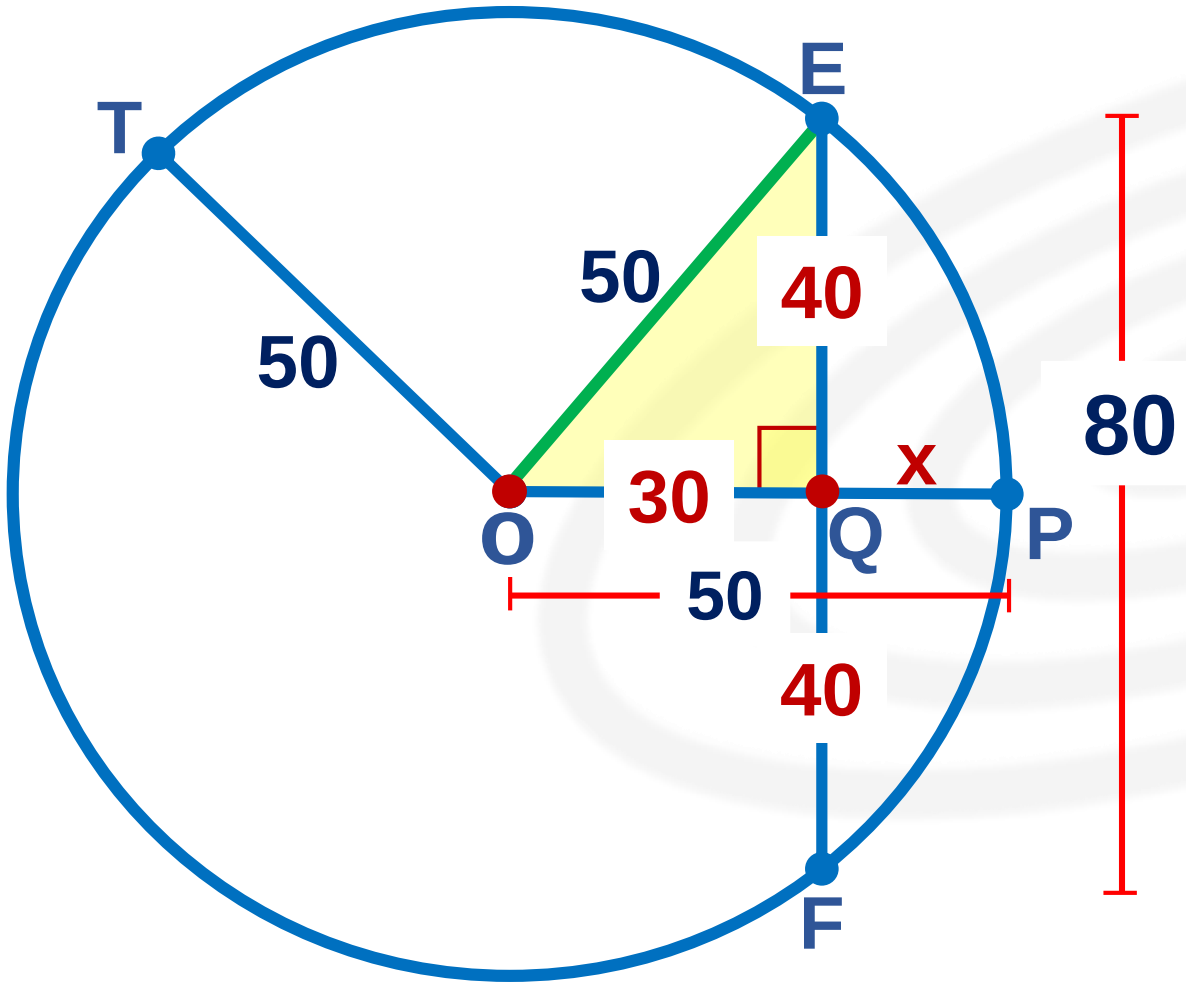
P y T: Punto de tangencia

- Aplicando teorema
- En $\overline{BC}$:

$$10 - x + 11 - x = 9$$
$$21 - 2x = 9$$
$$12 = 2x$$
$$6 = x$$

AQ = 6 cm

5. Si O es centro, OT = 50 u y EF = 80 u, calcule QP.



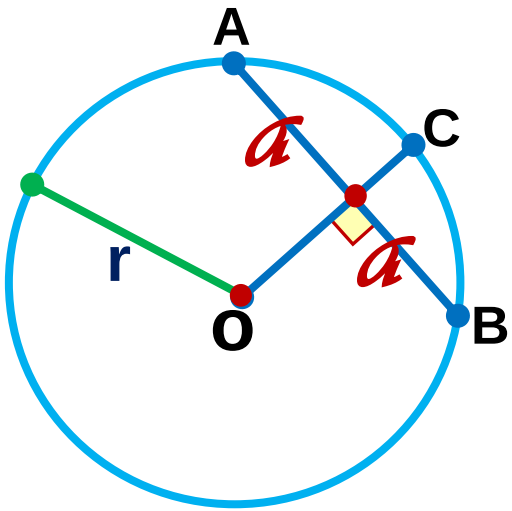
Resolución

- Piden: QP
- EQ = QF = 40
- Trazamos $\overline{OE}$
- $\triangle$OQE: notable
  37° y 53°
- En $\overline{OP}$

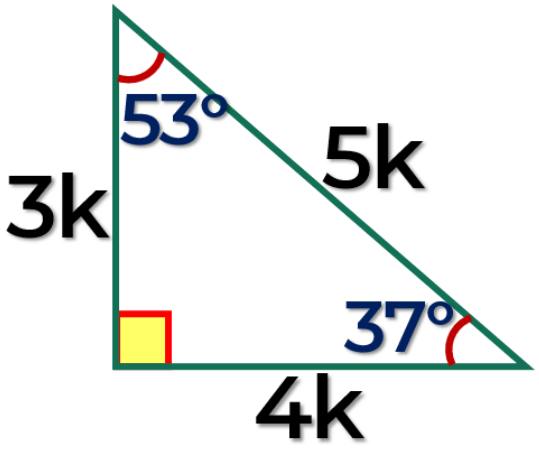
$30 + x = 50$

$x = 20$

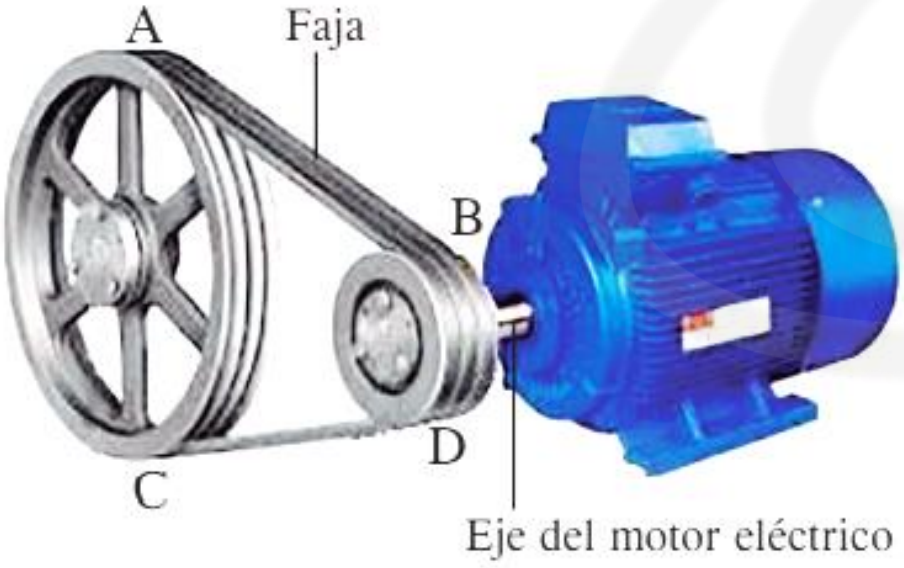
QP = 20 u



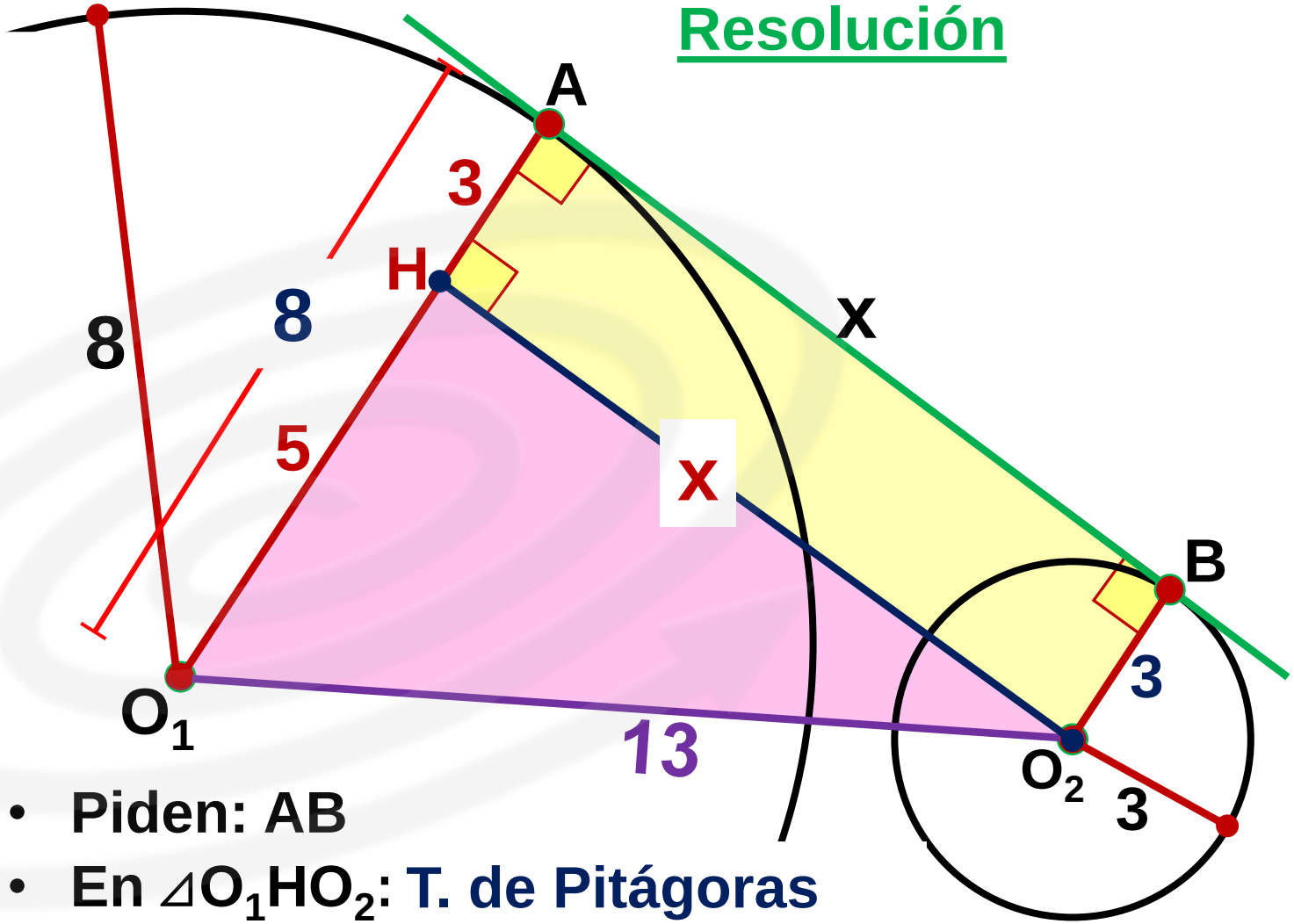
O: Centro



6. Se muestra un motor eléctrico unido a dos poleas cuyas longitudes de sus radios son 3 cm y 8 cm. Si los centros de las poleas distan 13 cm, A y B son puntos de tangencia con la faja, calcule AB



Resolución



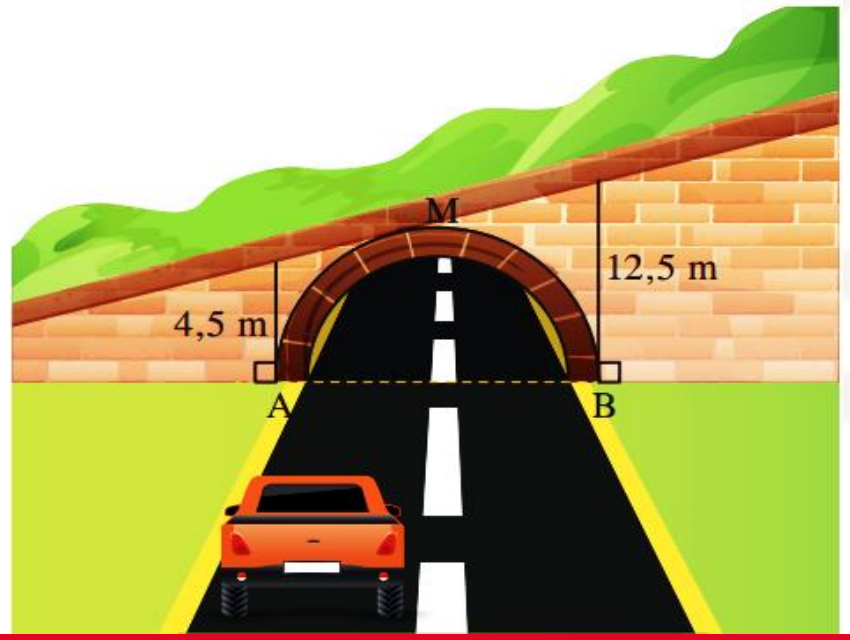
- Piden: AB
- En $\triangle O_1HO_2$: T. de Pitágoras

$$13^2 = 5^2 + x^2$$

$$12 = x$$

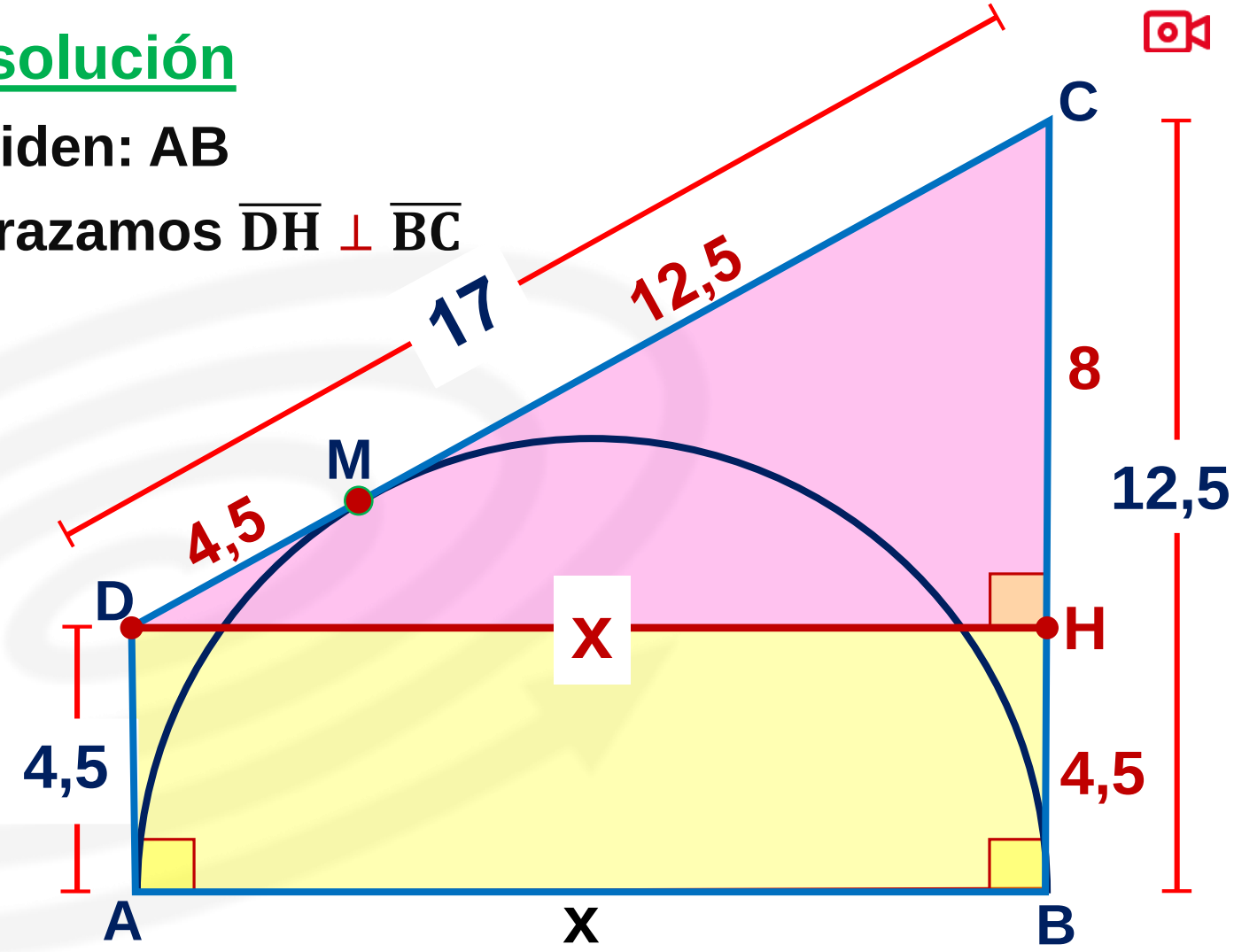
AB = 12 cm

7. El ingeniero Santiago estuvo a cargo de la construcción de un túnel en forma de una semicircunferencia. Si M es punto de tangencia, calcule AB.



Resolución

- Piden: AB
- Trazamos $\overline{DH} \perp \overline{BC}$



- En ⊿DHC: Teorema de Pitágoras

$17^2 = 8^2 + x^2$

$15 = x$

AB = 15 m