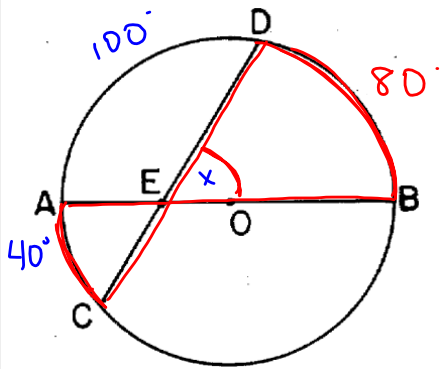


DO NOW

In the accompanying diagram, \overline{AB} is a diameter of circle O and chord \overline{CD} intersects diameter \overline{AB} at E . If $m\widehat{AD} = 100$ and $m\widehat{AC} = 40$, find $m\angle DEB$.

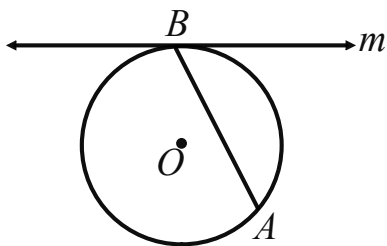


$$x = \frac{1}{2}(40 + 80)$$

$$x = 60^\circ$$

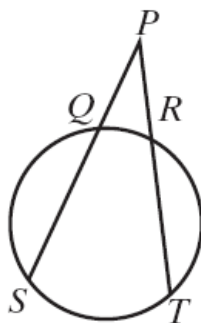
Mar 16-12:09 PM

A **tangent** is a line that intersects the circle at one point



Line m is a tangent

A **secant** is a line that intersects a circle at two points



\overline{PQS} and \overline{PRT} are secants

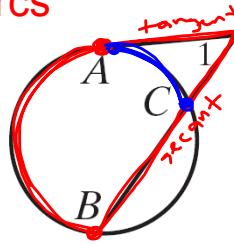
Apr 29-9:36 AM

Angles Formed Outside of Circle

Measure of the angle is half the difference of the intercepted arcs

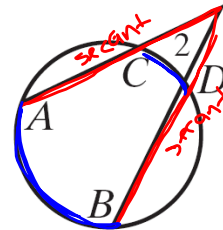
Tangent and a Secant

$$m\angle 1 = \frac{1}{2}(m\widehat{AB} - m\widehat{AC})$$



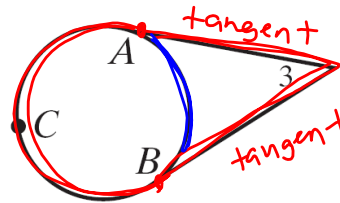
Two Secants

$$m\angle 2 = \frac{1}{2}(m\widehat{AB} - m\widehat{CD})$$



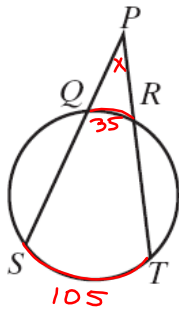
Two Tangents

$$m\angle 3 = \frac{1}{2}(m\widehat{ACB} - m\widehat{AB})$$



Mar 18-10:11 AM

- 1) Find $m\angle P$ if $m\widehat{ST} = 105$ and $m\widehat{QR} = 35$

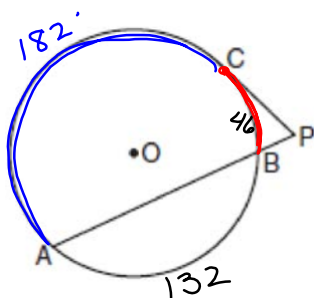


$$x = \frac{1}{2}(105 - 35)$$

$$x = \frac{1}{2}(70)$$

$$m\angle P = 35^\circ$$

- 2) In the accompanying diagram of circle O, \overline{PC} is a tangent, \overline{PBA} is a secant, $m\widehat{AB} = 132$, and $m\widehat{CB} = 46$. Find $m\angle P$.

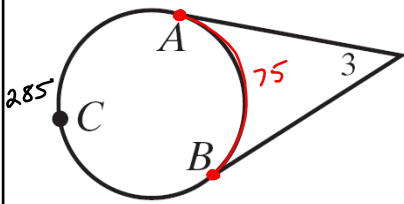


$$m\angle P = \frac{1}{2}(132 - 46)$$

$$m\angle P = 68^\circ$$

Apr 29-8:07 AM

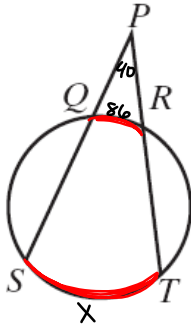
3) Find $m\angle 3$ if $m\widehat{ACB} = 285$



$$m\angle 3 = \frac{1}{2}(285 - 75)$$

$$m\angle 3 = 105^\circ$$

4) If $m\angle P = 40$ and $m\widehat{QR} = 86$, find $m\widehat{ST}$.



$$2 \cdot 40 = \frac{1}{2}(x - 86)$$

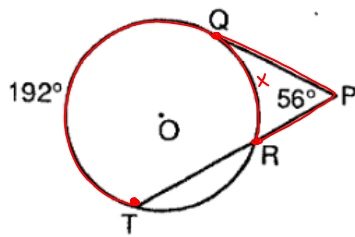
$$\begin{array}{r} 80 = x - 86 \\ + 86 \quad + 86 \\ \hline \end{array}$$

$$166 = x$$

$$m\widehat{ST} = 166^\circ$$

Apr 29-9:42 AM

5) In the accompanying diagram, \overline{PQ} is tangent to circle O at Q and \overline{PRT} is a secant. If $m\angle P = 56$ and $m\widehat{QT} = 192$, find $m\widehat{QR}$.



$$2 \cdot 56 = \frac{1}{2}(192 - x)$$

$$\begin{array}{r} 112 = 192 - x \\ -192 \quad -192 \\ \hline \end{array}$$

$$\begin{array}{r} -80 = -x \\ \frac{-80}{-1} \quad \frac{-x}{-1} \end{array}$$

$$80 = x$$

$$m\widehat{QR} = 80^\circ$$

Apr 29-8:40 AM