

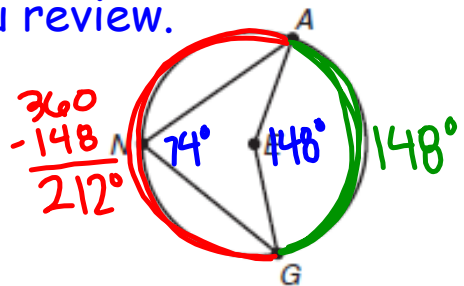
NOT in your book

Answer these questions to help you review.

5. In circle E shown, $m\angle ANG = 74^\circ$.

a. Determine $m\angle AEG$.

$$m\angle AEG = 2 \cdot 74 = \underline{148^\circ}$$



b. Determine $m\widehat{ANG}$.

$$m\widehat{ANG} = 360 - 148 = \underline{212^\circ}$$

6. In circle H shown, $m\widehat{CA} = 105^\circ$, $m\widehat{EA} = 47^\circ$, and $m\widehat{ET} = 100^\circ$.

a. Determine $m\angle ETC$.

$$m\widehat{EC} = 105 + 47 = 152^\circ$$

$$m\angle ETC = \frac{1}{2} \cdot 152 = \underline{76^\circ}$$

b. Determine $m\angle TCE$.

$$m\widehat{ET} = 100^\circ$$

$$m\angle TCE = \frac{1}{2} \cdot 100 = \underline{50^\circ}$$

c. Determine $m\angle CAE$.

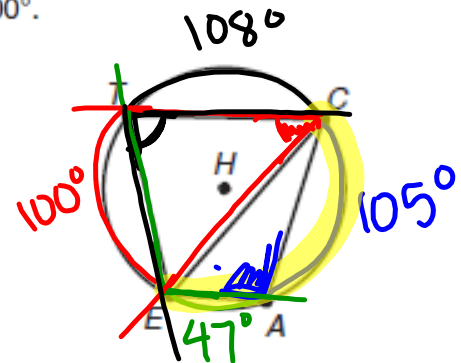
$$m\widehat{CTE} = 100 + 108 = 208^\circ$$

$$m\angle CAE = \underline{104^\circ}$$

d. Determine $m\angle TEA$.

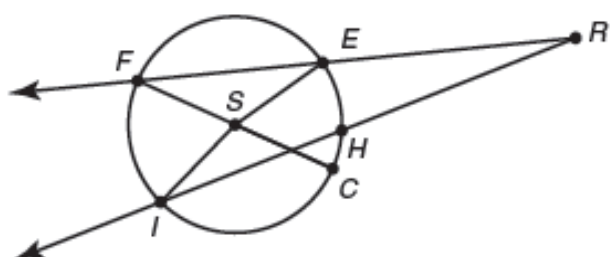
$$m\widehat{TCA} = 108 + 105 = 213^\circ$$

$$m\angle TEA = \frac{1}{2} \cdot 213 = \underline{106.5^\circ}$$



NOT in your book

Use circle S to answer each question. Explain your reasoning.



1. Suppose that $m\widehat{CE} = 59^\circ$. What is $m\widehat{CFE}$?
2. Suppose that $m\angle CSI = 124^\circ$. What is $m\widehat{FI}$?
3. Suppose that $m\widehat{CE} = 55^\circ$. What is $m\angle EFC$?
4. Suppose that $m\angle FSI = 71^\circ$. What is $m\widehat{IC}$?

Manhole Covers

Measuring Angles Inside and Outside of Circles

9.3

pg.675 & 677 in your book

2. Prove the Interior Angles of a Circle Theorem.

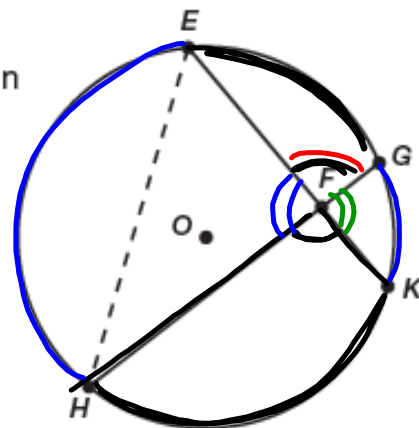
Given: Chords EK and GH intersect at point F in circle O .

~~Prove:~~ $m\angle KFH = \frac{1}{2}(m\widehat{HK} + m\widehat{EG})$

$$m\angle GFE = \frac{1}{2}(m\widehat{EG} + m\widehat{HK})$$

$$m\angle EFH = \frac{1}{2}(m\widehat{EH} + m\widehat{GK})$$

$$m\angle GFK = \frac{1}{2}(m\widehat{GK} + m\widehat{EH})$$



The Interior Angles of a Circle Theorem states: "If an angle is formed by two intersecting chords or secants of a circle such that the vertex of the angle is in the interior of the circle, then the measure of the angle is half of the sum of the measures of the arcs intercepted by the angle and its vertical angle."

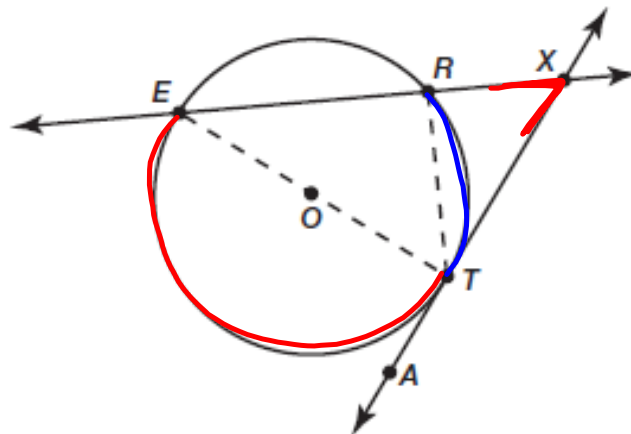
pg.682 in your book

The Exterior Angles of a Circle Theorem states: "If an angle is formed by two intersecting chords or secants or a circle such that the vertex of the angle is in the exterior of the circle, then the measure of the angle is half of the difference of the measures of the arcs intercepted by the angle."

pg.680 in your book

3. Prove each case of the Exterior Angles of a Circle Conjecture.
 a. Case 1

1 secant & 1 tangent



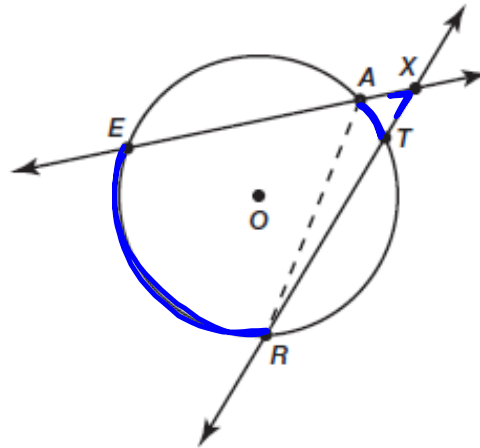
~~Given:~~ Secant EX and tangent TX intersect at point X .

~~Prove:~~ $m\angle EXT = \frac{1}{2}(m\widehat{ET} - m\widehat{RT})$

pg.681 in your book

b. Case 2

2 secants



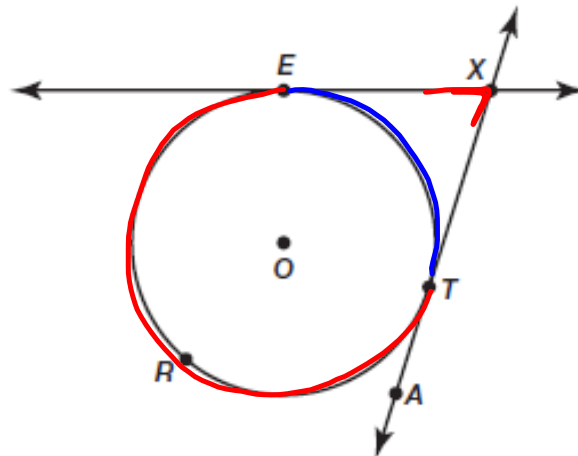
~~Given:~~ Secants EX and RX intersect at point X .

~~Prove:~~ $m\angle EXR = \frac{1}{2}(m\widehat{ER} - m\widehat{AT})$

pg.682 in your book

c. Case 3

2 tangents



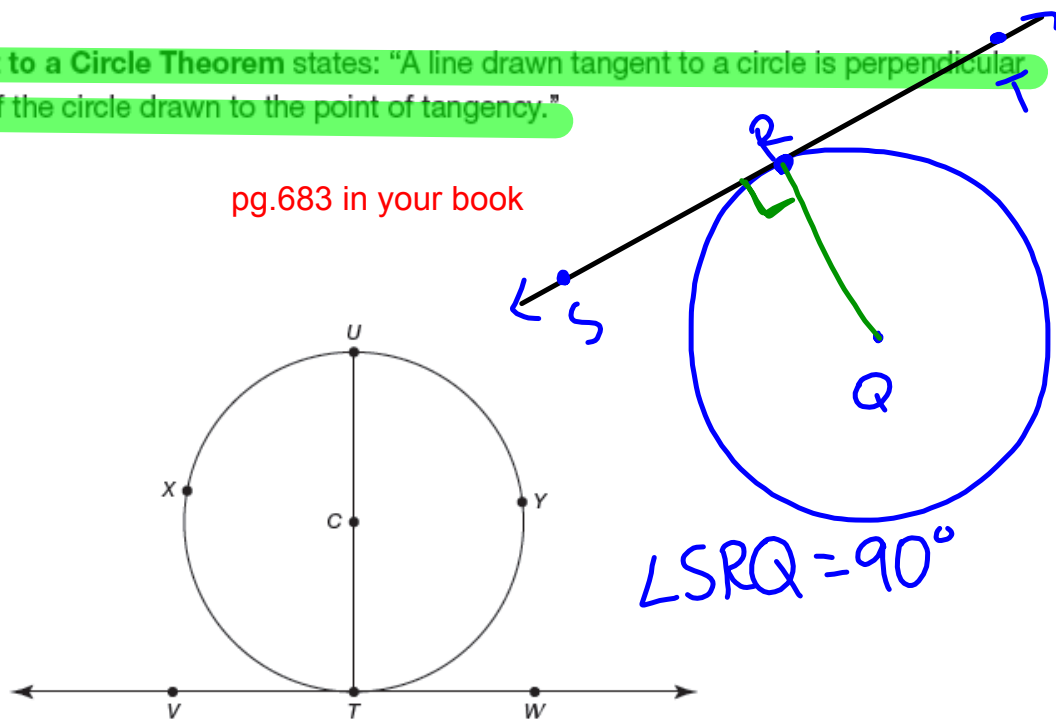
~~Given:~~ Tangents EX and AX intersect at point X .

~~Prove:~~ $m\angle EXT = \frac{1}{2}(m\widehat{ERT} - m\widehat{ET})$

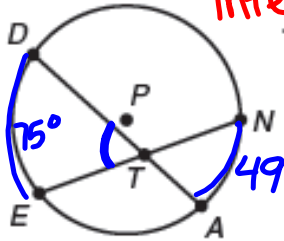
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The Tangent to a Circle Theorem states: "A line drawn tangent to a circle is perpendicular to a radius of the circle drawn to the point of tangency."

pg.683 in your book



NOT in your book
Interior Ls in a Circle thm.



1. In circle P shown, $m\widehat{DE} = 75^\circ$ and $m\widehat{NA} = 49^\circ$. Determine $m\angle DTE$.

$$m\angle DTE = \frac{1}{2}(m\widehat{DE} + m\widehat{NA})$$

$$m\angle DTE = \frac{1}{2}(75 + 49)$$

$$m\angle DTE = \frac{1}{2}(124)$$

$$m\angle DTE = \underline{62^\circ}$$

2. In circle K shown, $m\widehat{DN} = 144^\circ$ and $m\angle NCA = 68^\circ$. Determine $m\widehat{EA}$.

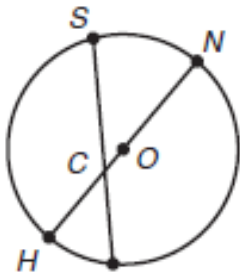
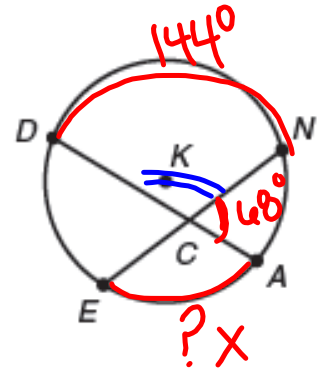
$$m\angle NKD = 180 - 68 = 112^\circ$$

$$m\angle NKD = \frac{1}{2}(m\widehat{DN} + m\widehat{EA})$$

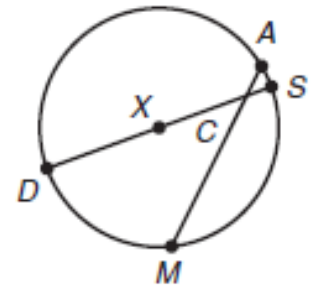
$$2 \cdot 112 = \frac{1}{2}(144 + x)$$

$$\begin{array}{r} 224 = 144 + x \\ -144 \quad -144 \\ \hline 80 = x \end{array}$$

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



3. In circle O shown, $m\widehat{SN} = 55^\circ$ and $m\widehat{HA} = 35^\circ$. Determine $m\angle SCH$.

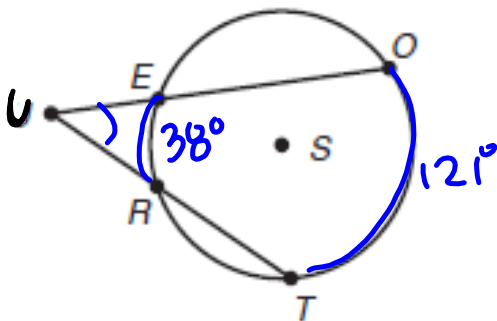


4. In circle X shown, $m\widehat{AS} = 11^\circ$ and $m\widehat{MS} = 104^\circ$. Determine $m\angle DCM$.

pg 681: case 2 - exterior Ls of a circle

5. In circle S shown, $m\widehat{ER} = 38^\circ$ and $m\widehat{OT} = 121^\circ$. Determine $m\angle OUT$.

$$m\angle OUT = \frac{1}{2}(121 - 38)$$

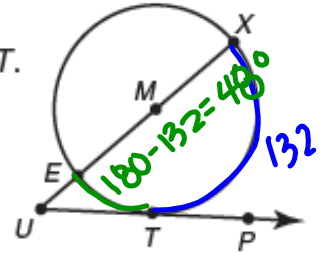


NOT in your book

p 680 case 1: exterior \angle s in a circle thm.

6. In circle M shown, \overline{XE} is a diameter of the circle and $m\widehat{XT} = 132^\circ$. Draw a chord that connects points X and T . Then determine $m\angle XUT$.

$$m\angle XUT = \frac{1}{2}(132 - 48)$$

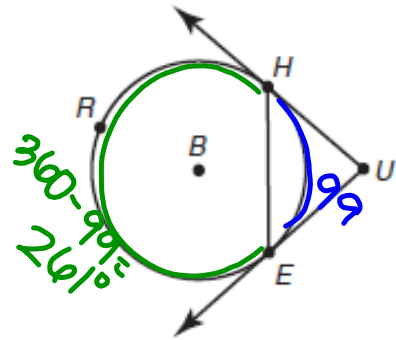


Case 3 p 682

8. In circle B shown, $m\widehat{HE} = 99^\circ$.

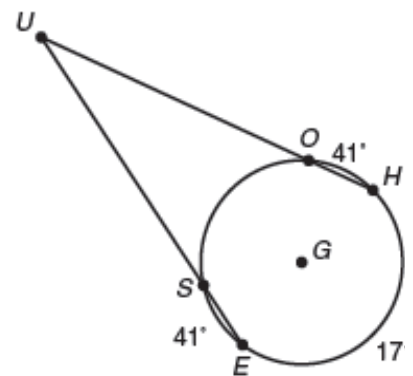
a. Determine $m\angle HUE$.

$$m\angle HUE = \frac{1}{2}(261 - 99)$$

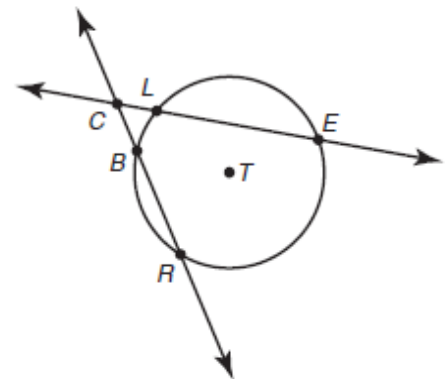


7. In circle G shown, $\widehat{OH} = \widehat{ES}$, $m\widehat{OH} = 41^\circ$, and $m\widehat{HE} = 171^\circ$. Determine $m\angle EUH$.

b. Determine $m\angle BHU$.



9. In circle T shown, $m\angle RCE = 57^\circ$ and $m\widehat{RE} = 141^\circ$. Determine $m\widehat{BL}$.



pg.671 in your book

Homework

Finish Lesson 9.3