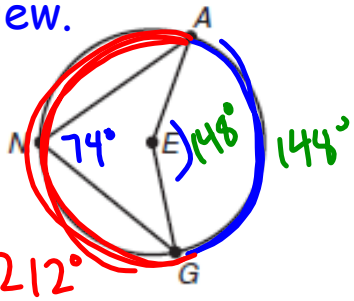
NOT in your book

Answer these questions to help you review.

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



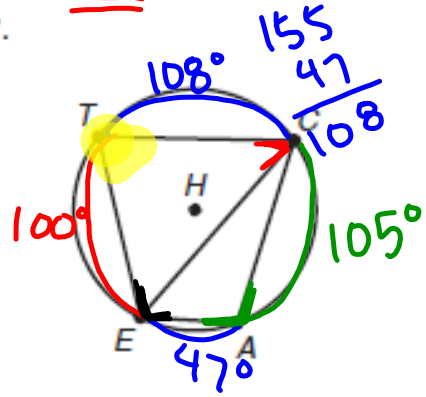
a. Determine $m\angle AEG$.

$m\angle AEG = 74 \cdot 2 = 148°$

b. Determine $m\overset{\frown}{ANG}$.

$m\overset{\frown}{AG} = 148°$ $\quad m\overset{\frown}{ANG} = 360 - 148 = 212°$

6. In circle H shown, $m\overset{\frown}{CA} = 105°$, $m\overset{\frown}{EA} = 47°$, and $m\overset{\frown}{ET} = 100°$.



a. Determine $m\angle ETC$.

$m\overset{\frown}{EC} = 105 + 47 = 152°$

$m\angle ETC = \frac{1}{2} \cdot 152 = 76°$

b. Determine $m\angle TCE$.

$m\overset{\frown}{TE} = 100°$

$m\angle TCE = \frac{1}{2} \cdot 100$

$m\angle TCE = 50°$

c. Determine $m\angle CAE$.

$m\overset{\frown}{CTE} = 100 + 108 = 208°$

$m\angle CAE = \frac{1}{2} \cdot 208 = 104°$

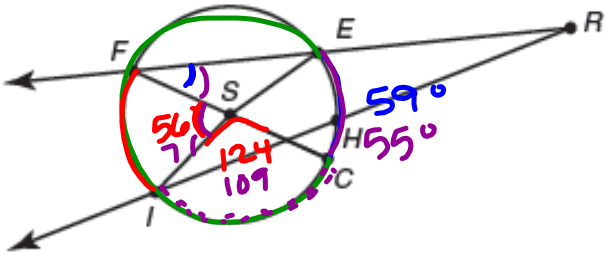
d. Determine $m\angle TEA$.

$m\overset{\frown}{ACT} = 105 + 108 = 213°$

$m\angle TEA = \frac{1}{2} \cdot 213 = 106.5°$

NOT in your book

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



1. Suppose that $m\overset{\frown}{CE} = 59°$. What is $m\overset{\frown}{CFE}$?

$m\angle CFE = \frac{1}{2} \cdot 59 = 29.5°$ $m\overset{\frown}{CFE} = 360 - 59 = 301°$

2. Suppose that $m\angle CSI = 124°$. What is $m\overset{\frown}{FI}$?

$m\angle FSI = 180 - 124 = 56°$ $m\overset{\frown}{FI} = 56°$

3. Suppose that $m\overset{\frown}{CE} = 55°$. What is $m\angle EFC$?

$m\angle EFC = \frac{1}{2} \cdot 55 = 27.5°$

4. Suppose that $m\angle FSI = 71°$. What is $m\overset{\frown}{IC}$?

$m\overset{\frown}{IC} = 109°$

Manhole Covers
Measuring Angles Inside and Outside of Circles

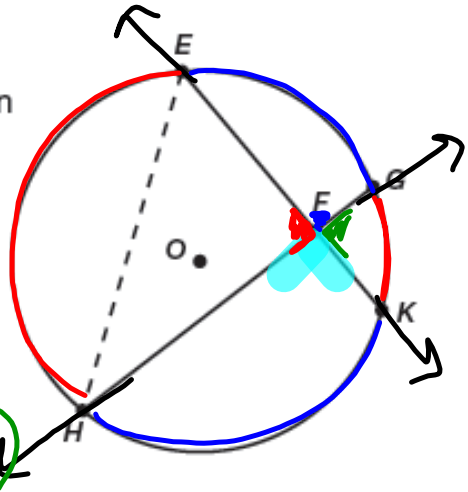
9.3

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



$m\angle EFG = \frac{1}{2}(m\overset{\frown}{EG} + m\overset{\frown}{HK})$

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

$m\angle GEK = \frac{1}{2}(m\overset{\frown}{GK} + m\overset{\frown}{EH})$

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."

Jan 4-9:01 AM

pg.682 in your book

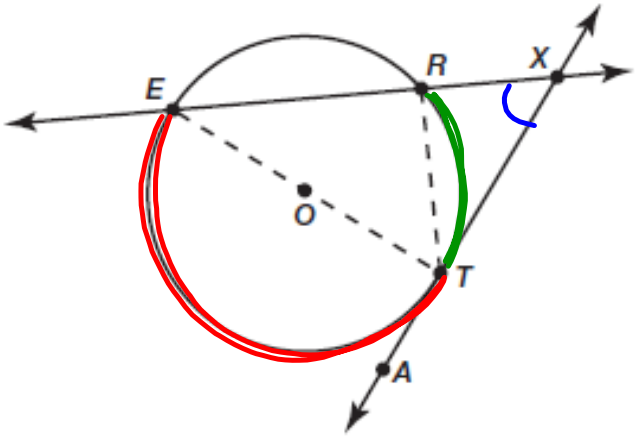
The **Exterior Angles of a Circle Theorem** states: "If an angle is formed by two intersecting tangents or secants of a circle such that the vertex of the angle is in the exterior of the circle, then the measure of the angle is half of the difference of the measures of the arcs intercepted by the angle."

pg.680 in your book

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

a. **Case 1**

1 secant & 1 tangent



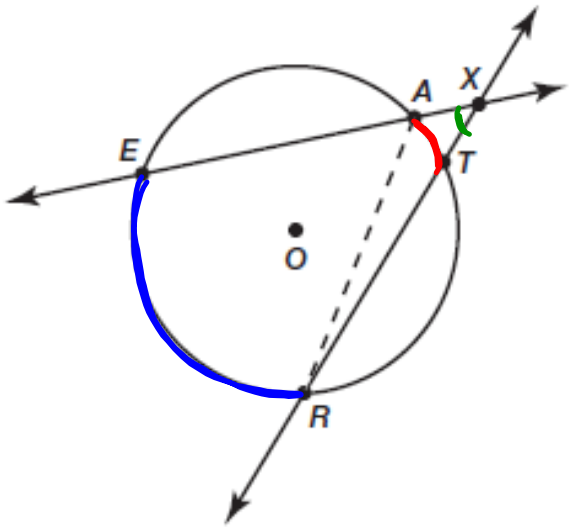
Given: Secant EX and tangent TX intersect at point X.

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

pg.681 in your book

b. Case 2

2 secants



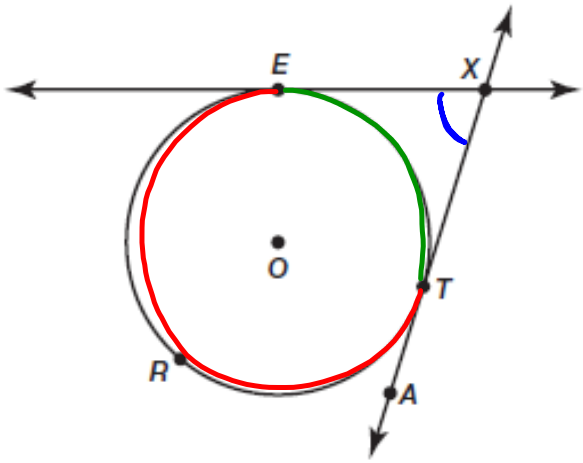
Given: Secants EX and RX intersect at point X.

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

pg.682 in your book

c. Case 3

2 tangents



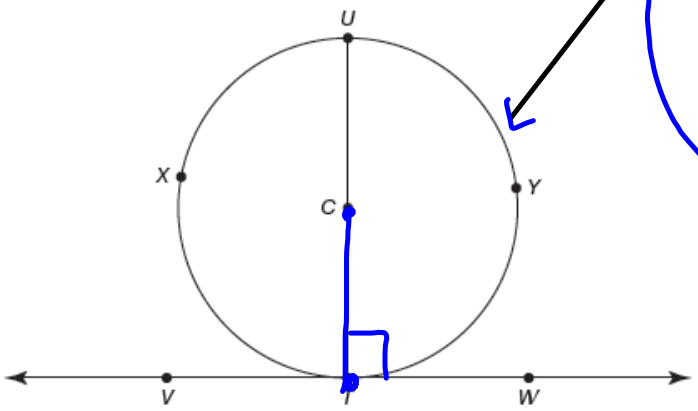
Given: Tangents EX and AX intersect at point X.

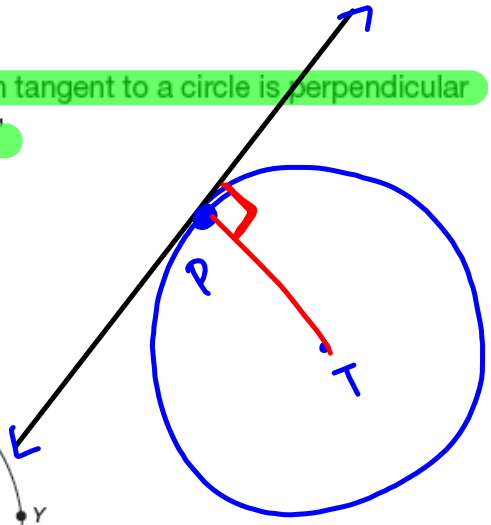
Prove: $m\angle EXT = \frac{1}{2}(m\overset{\frown}{ERT} - m\overset{\frown}{ET})$

pg.684 in your book

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

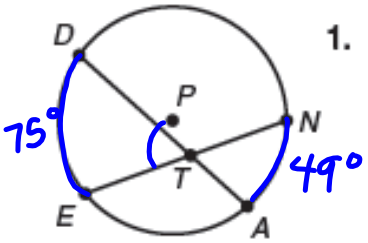




Jan 4-9:17 AM

NOT in your book

(Interior Ls of a circle thm.)



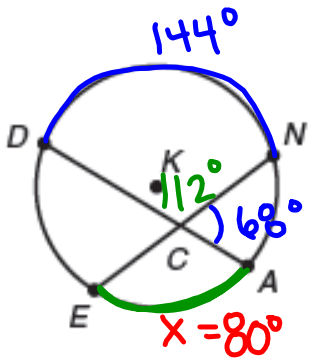
1. In circle P shown, $m\overset{\frown}{DE} = 75°$ and $m\overset{\frown}{NA} = 49°$. Determine $m\angle DTE$.

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

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

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

$m\angle DTE = 62°$



2. In circle K shown, $m\overset{\frown}{DN} = 144°$ and $m\angle NCA = 68°$. Determine $m\overset{\frown}{EA}$.

$m\angle NCD = 180 - 68 = 112°$

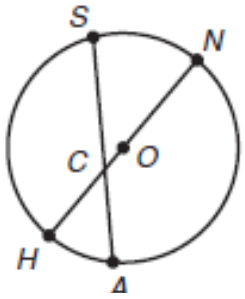
$m\angle NCD = \frac{1}{2}(m\overset{\frown}{DN} + m\overset{\frown}{EA})$

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

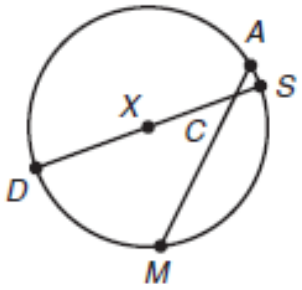
$224 = 144 + x$

$-144 \quad -144$

$80° = x$



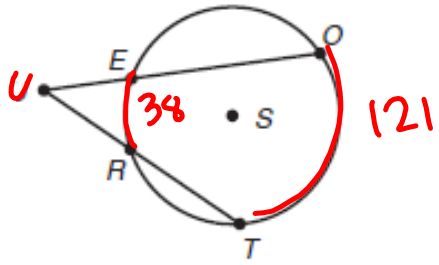
3. In circle O shown, $m\overset{\frown}{SN} = 55°$ and $m\overset{\frown}{HA} = 35°$. Determine $m\angle SCH$.



4. In circle X shown, $m\overset{\frown}{AS} = 11°$ and $m\overset{\frown}{MS} = 104°$. Determine $m\angle DCM$.

Case 2 p681 - Exterior Ls in a circle thm.

5. In circle S shown, $m\overset{\frown}{ER} = 38°$ and $m\overset{\frown}{OT} = 121°$. Determine $m\angle OUT$.



$m\angle OUT = \frac{1}{2}(m\overset{\frown}{OT} - m\overset{\frown}{ER})$

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

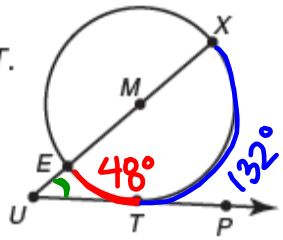
$m\angle OUT = \frac{1}{2}(83)$

$m\angle OUT = 41.5°$

NOT in your book

case1 - exterior ∠s in a circle thm.

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



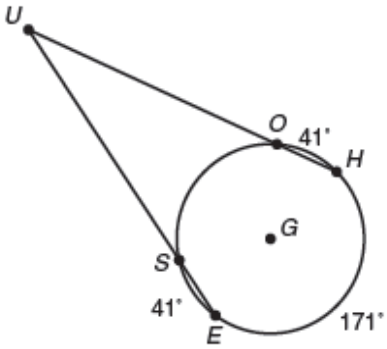
$m\overset{\frown}{ET} = 180 - 132 = 48°$

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

$m\angle XUT = \frac{1}{2}(84)$

$m\angle XUT = 42°$

7. In circle G shown, $OH = \overline{ES}$, $m\overset{\frown}{OH} = 41°$, and $m\overset{\frown}{HE} = 171°$. Determine $m\angle EUH$.



case3 p 682 - exterior ∠s of a circle thm.

8. In circle B shown, $m\overset{\frown}{HE} = 99°$.

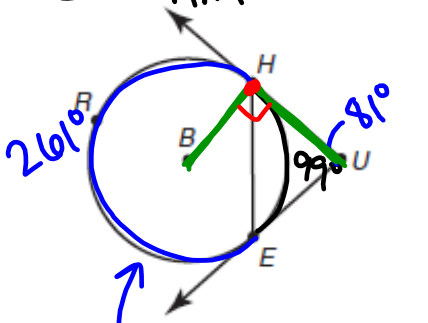
a. Determine $m\angle HUE$.

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

$m\angle HUE = 81°$

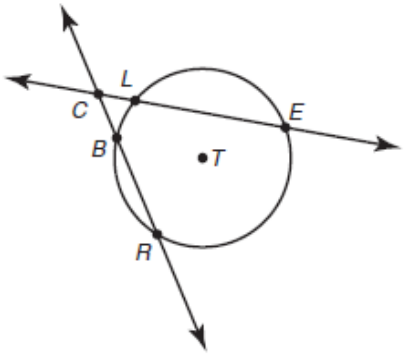
b. Determine $m\angle BHU$.

$m\angle BHU = 90°$



$360 - 99 = 261°$

9. In circle T shown, $m\angle RCE = 57°$ and $m\overset{\frown}{RE} = 141°$. Determine $m\overset{\frown}{BL}$.



pg.671 in your book

Homework

Finish Lesson 9.3

Aug 24-2:00 PM