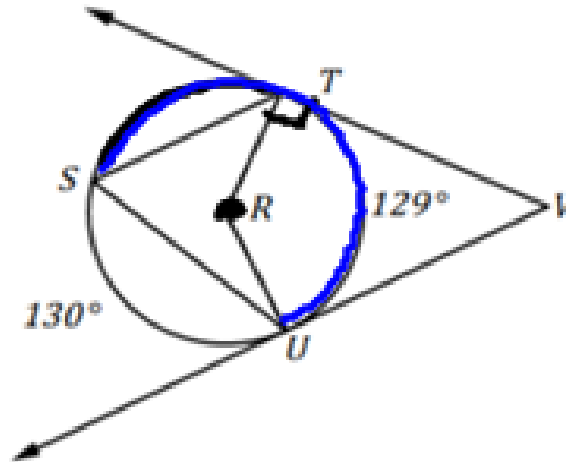


Let's Practice!

3. Find each of the following angles and arcs formed in circle R .

- a. $m\angle RTV = 90$
 b. $m\angle TRU = 129$
 c. $m\angle TVU = 51$
 d. $m\angle TSU = 64.5$
 e. $m\widehat{ST} = 101$
 f. $m\widehat{STU} = 230$



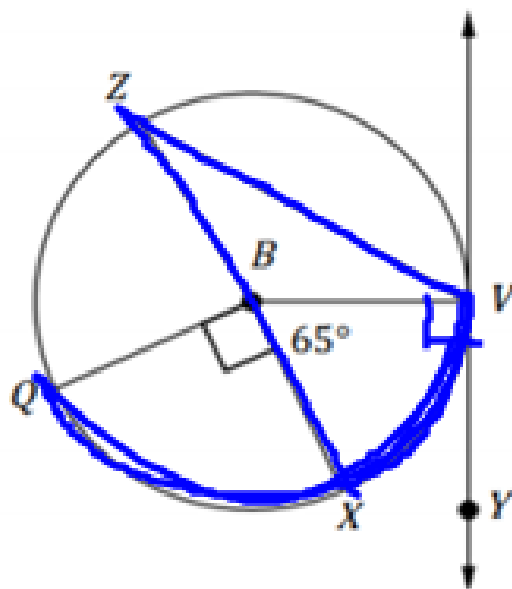
$$\begin{array}{r} 180 \\ -129 \\ \hline 51 \end{array} \quad \sqrt{129}$$

$$\begin{array}{r} 129 \\ +130 \\ \hline 259 \end{array} \quad \begin{array}{r} 360 \\ -259 \\ \hline 101 \end{array}$$

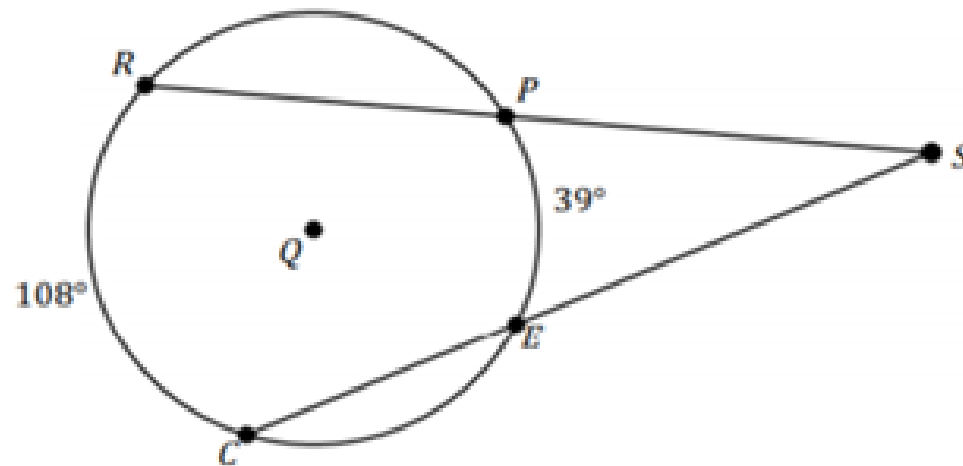
$$\begin{array}{r} 129 \\ +101 \\ \hline 230 \end{array}$$

4. Find each of the following angles and arcs formed in circle B .

- a. $m\angle YVB = 90$
 b. $m\widehat{VX} = 65$
 c. $m\angle VZX = 32.5$
 d. $m\widehat{VQ} = 155$



Consider the diagram below where $\angle RSC$ is formed by two secants intersecting outside of circle Q .



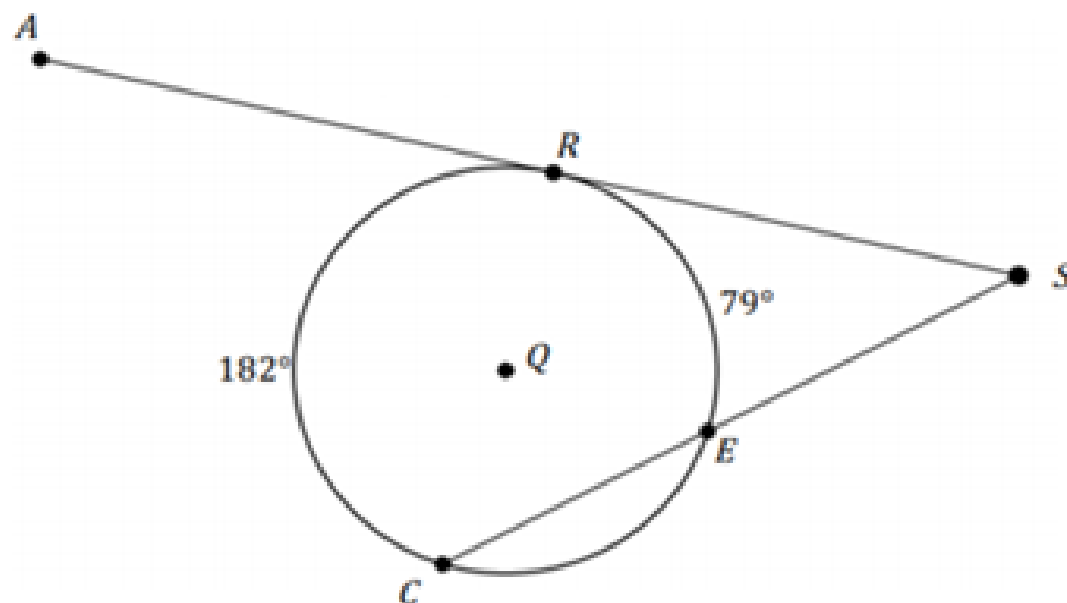
Identify the intercepted arcs.

$$\widehat{RC} \text{ \& \; } \widehat{PE}$$

Determine $m\angle RSC$.

$$\frac{1}{2} (108 - 39)$$
$$34.5$$

1. Consider the diagram below, where $\angle ASC$ is formed by a tangent line and a secant line intersecting outside of circle Q .



- a. What are the intercepted arcs in the above diagram?

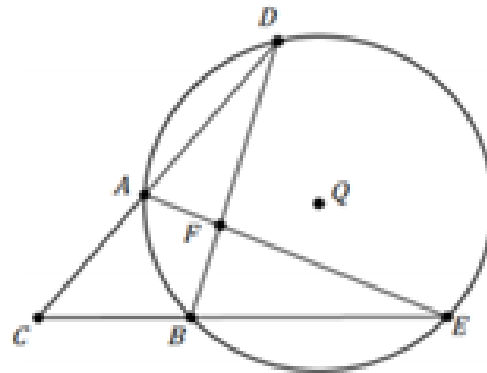
\widehat{RC} & \widehat{RE}

- b. Determine $m\angle ASC$.

$$\frac{1}{2}(182 - 79) = 51.5$$

Informal Assessment:

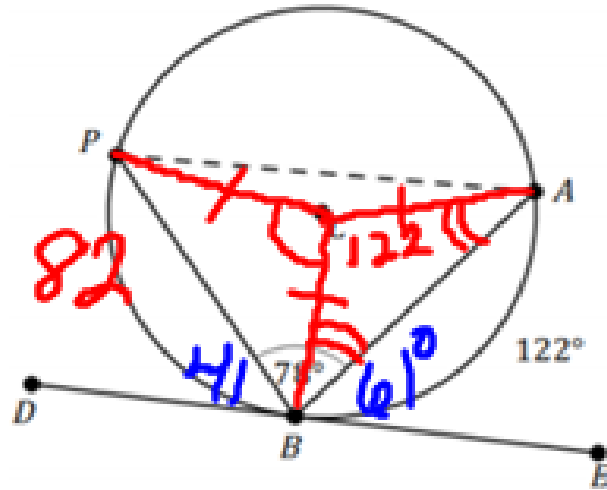
1. Consider the diagram below.



Which of the following statements is correct?

- $\triangle DCB \sim \triangle ECA$ by Angle-Angle Similarity
- $\angle ACB \cong \angle BFA$ by definition of an angle formed by two secants intersecting outside of a circle
- $\angle DAF \cong \angle CBE$ by Alternate Interior Angles Theorem
- $m\angle BFE = m\widehat{BE}$ by definitions of central angles and inscribed angles

2. Consider the diagram below.



If triangles PCB and ACB are constructed, what are the measures of $\angle PCB$ and $\angle CAB$?

$$m\angle PCB = \boxed{82}$$

$$m\angle CAB = \boxed{39}$$

$$\frac{122}{2} = 61$$

$$\begin{array}{r} 180 \\ - 122 \\ \hline 58 \div 2 = 29 \end{array}$$

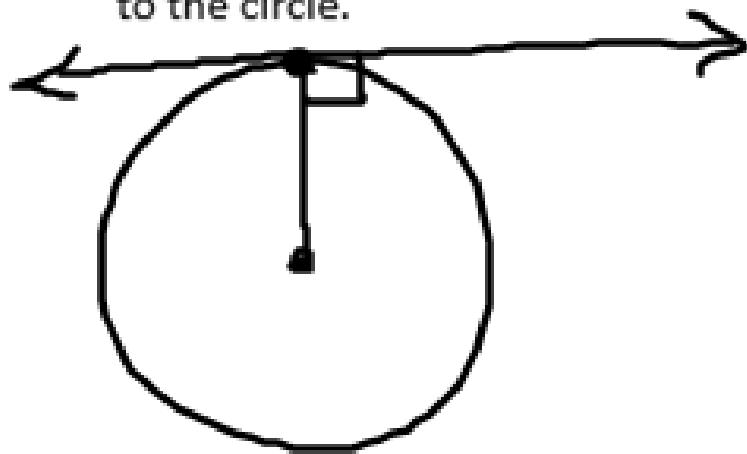
$$\begin{array}{r} 61 \\ + 78 \\ \hline 139 \\ 180 - 139 \\ = 41 \end{array}$$

Tangent Theorem

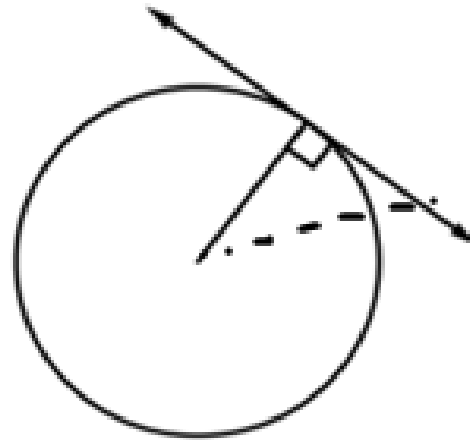
If a line is tangent to a circle, then the line is perpendicular to the radius from the point of tangency.

Converse:

If a line in the plane of the circle is perpendicular to a radius at its endpoint on the circle, then the line is tangent to the circle.



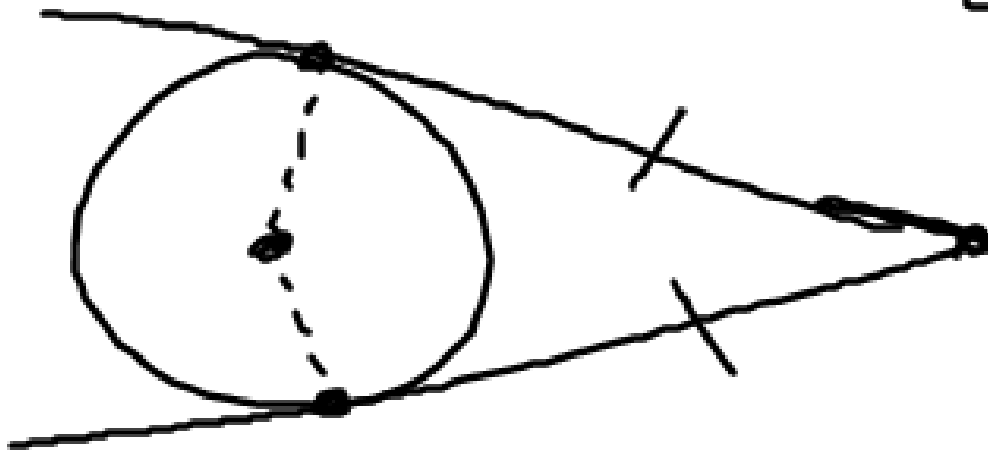
How could we prove the Tangent Theorem using the figure below?



Use Pythagorean
Theorem
 $a^2 + b^2 = c^2$

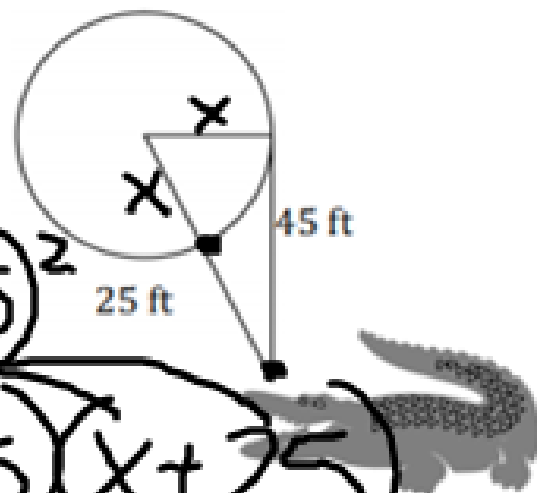
Tangent Segments Theorem

If two segments are tangent to the same exterior point, they are congruent.



Let's Practice!

3. Albert the Alligator is sunning himself next to his favorite, perfectly circular pond. He is 25 feet from the bank and 45 feet from the point of tangency. Determine the radius of Albert's favorite pond using the given information.



$$45^2 + x^2 = (x + 25)^2$$

$$2025 + x^2 = (x + 25)(x + 25)$$

$$2025 + x^2 = x^2 + 25x + 25x + 625$$

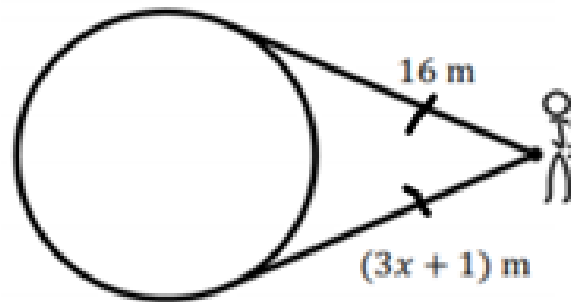
$$2025 = 50x + 625$$

$$\begin{array}{r} 2025 = 50x + 625 \\ - 625 \\ \hline 1400 = 50x \end{array}$$

$$1400 = 50x$$

$$x = 28 \text{ ft}$$

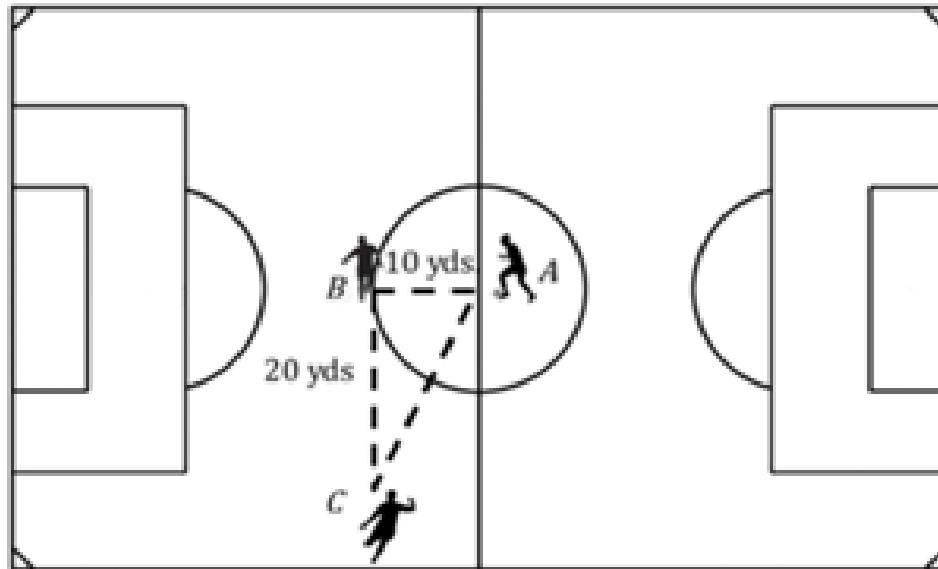
4. George is standing in front of a silo and can only see as far as the diagram shows. Determine the value of x . Support your conclusion with a theorem.



$$\begin{array}{r} 3x + 1 = 16 \\ - 1 \quad - 1 \\ \hline 3x = 15 \\ x = 5 \end{array}$$

Try It!

5. Three teammates from a local soccer club are practicing passing in triangular pattern as shown in the diagram below.



$$20^2 + 10^2 = c^2$$
$$400 + 100 = c^2$$
$$\sqrt{500} = \sqrt{c^2}$$
$$22.4 = c$$

Player A has the ball and is 10 yards from Player B, who is 20 yards from Player C. How far would the ball travel if Player A decides to pass the ball to Player C? Justify your answer.