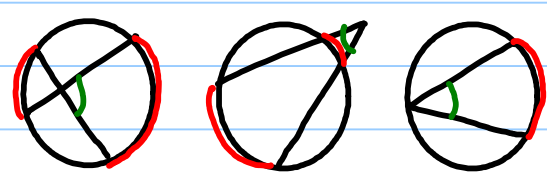


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14.4 Secant-Tangent Angles ☺.....

Vertex
inside... outside... on... the circle
 $\frac{+}{2}$ $\frac{-}{2}$ $\div 2$



Thm 14.10
vertex outside $\frac{-}{2}$
secant-tangent angle
• $\frac{1}{2}$ the difference of the intercepted arcs

Thm 14.11
vertex on $\div 2$
• $\frac{1}{2}$ of the intercepted arc

Thm 14.12
vertex outside $\frac{-}{2}$
tangent-tangent angle
• $\frac{1}{2}$ the diff of the intercepted arcs

ex 1) \overline{AD} is tangent to $\odot K$.

Find $m\angle 1$
vertex (outside): $\frac{160 - 90}{2} = m\angle 1$
 $\frac{70}{2} = m\angle 1$
 $35 = m\angle 1$

Handwritten calculations:

$$\begin{array}{r} 160 \\ + 110 \\ \hline 270 \end{array}$$

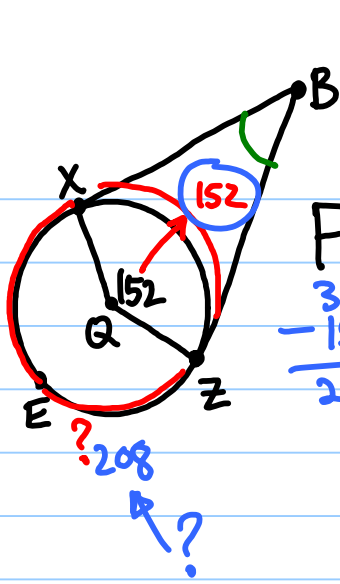
$$\begin{array}{r} 360 \\ - 270 \\ \hline 90 \end{array}$$

ex 2) Find $m\angle 2$
vertex (on): $\frac{200}{2} = m\angle 2$
 $100 = m\angle 2$

Handwritten calculation:

$$90 + 110 = 200$$

ex 3)



vertex
outside
 $= 2$

Find $m\angle B$

$$\begin{array}{r} 360 \\ - 152 \\ \hline 208 \end{array}$$

$$\frac{208 - 152}{2} = \frac{56}{2} = \boxed{28^\circ}$$