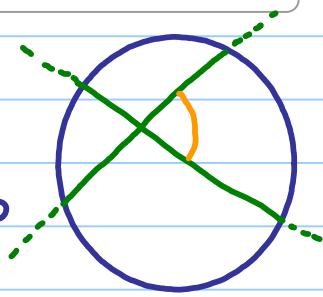
4/19 THU

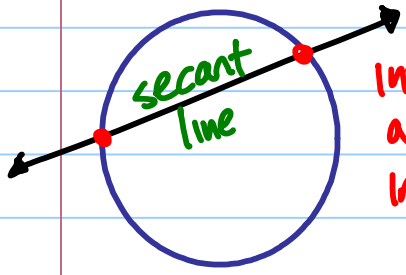
14.3 Secant Angles

* **secant segment** - contains a chord (of a circle)

* **secant angle** - formed by the intersection of two secant segments



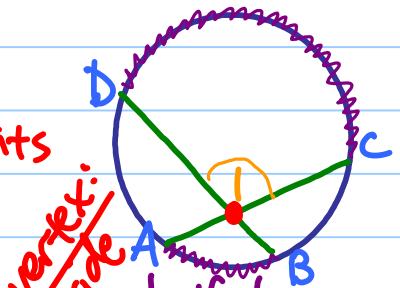
Thm 14.7



intersects a circle in two points

Thm 14.8

$m\angle 1 = \frac{1}{2}(m\overset{\frown}{CD} + m\overset{\frown}{AB})$

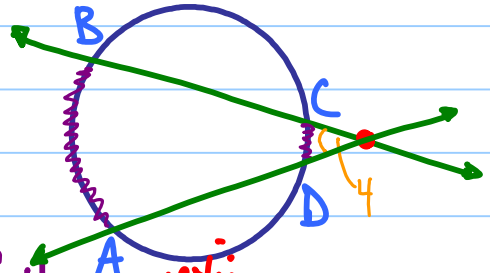


vertex: inside

- half the sum of the intercepted arcs

Thm 14.9

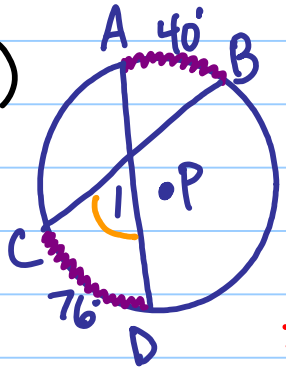
$m\angle 4 = \frac{1}{2}(m\overset{\frown}{AB} - m\overset{\frown}{CD})$



vertex: outside

- half the difference of the intercepted arcs

ex 1)



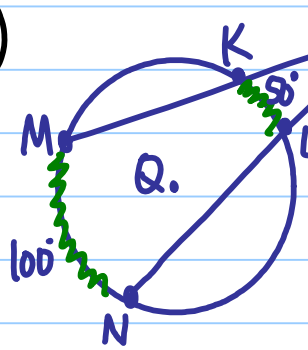
Find $m\angle 1$.

- "$\frac{1}{2}$ the sum"

$\frac{1}{2}(40 + 76)$

$\frac{1}{2}(116) = 58°$

ex 2)



Find $m\angle J$

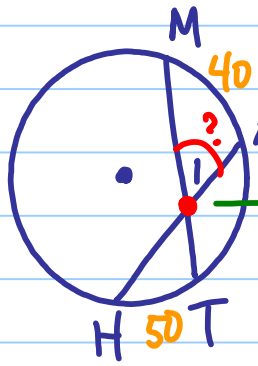
- "outside"

$\frac{1}{2}$ difference

$= \frac{1}{2}(100 - 50)$

$= \frac{1}{2}(50) = 25$

Your Turn



If $m\overset{\frown}{MA} = 40$ & $m\overset{\frown}{HT} = 50$,

Find $m\angle 1$.

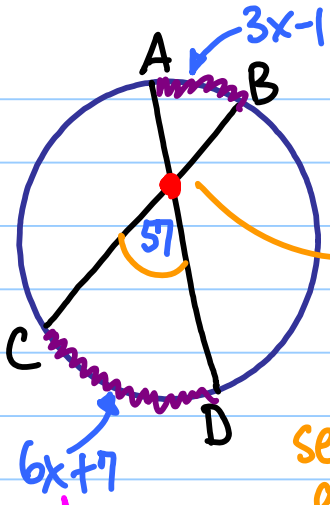
"inside"

$\frac{1}{2}$ sum

$\frac{1}{2}(40 + 50) = \frac{1}{2}(90)$

$= 45$

ex 3) Find x & $m\overset{\frown}{CD}$.



inside: $\frac{1}{2}$ sum

$57 = \frac{1}{2}(3x-1+6x+7)$]$^{\times 2}$

secant angle

$114 = 3x-1+6x+7$

$114 = 9x+6$

$-6 \quad -6$

$108 = 9x$

$\frac{108}{9} = \frac{9x}{9}$

$12 = x$

$6(12)+7$

$72+7$

$m\overset{\frown}{CD} = 79°$