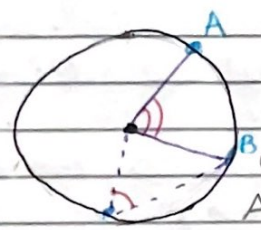
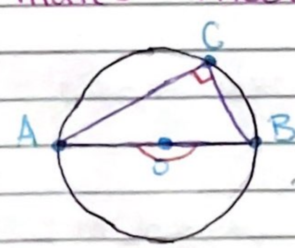
The Assignment plan:
Assignment 5 due this Friday (take extra time if you need to)
Assignment 2e goes live this Friday, due Monday February 26.
Assignment 6 goes live Friday February 23, due Friday March 1st



A central angle is twice the corresponding circumfevential angle
Assignment 5 (III-203)

Corollary:
Given a chord, all the "inscribed" angles from the same arc subtended by the chord are equal.

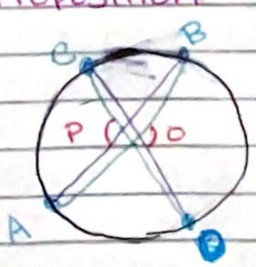
Thales' Theorem:

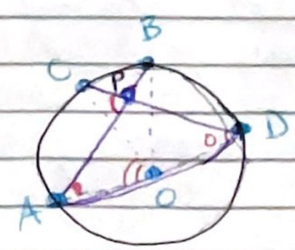


The triangle formed by a diagonal & any other point on the circle is right.

proof
$\angle ACB = \frac{1}{2} \angle AOB$
$= \frac{1}{2} \frown = ∟ //$

Proposition





$\angle = 2\angle$

Suppose chords AB & CD of a circle intersect at P then...

$\therefore \angle APC = \frac{1}{2}\angle AOC + \frac{1}{2}\angle BOD$

Proof:

$\angle APC$?

$\angle ADC = \frac{1}{2}\angle AOC$

$\angle BAD = \frac{1}{2}\angle BOD$

Connect A to D to make $\triangle ADP$

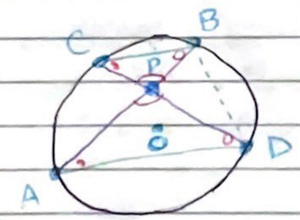
Then the external angle $\angle APC = \angle PAD + \angle PDA$

$= \angle BAD + \angle ADC$

$= \frac{1}{2}\angle AOC + \frac{1}{2}\angle BOD$ //

Proposition: Suppose chords AB & CD meet at P inside the circle, then

$|PA| \cdot |PB| = |PC| \cdot |PD|$



Proof:

Connect B to C & A to D to make $\triangle PBC$ & $\triangle PAD$

$\angle BPC = \angle APD$ (opposite angles)

$\angle ABC = \angle ADC$ (subtend the same chord of AC)

$\angle PBC = \angle ADP$

By angle-angle similarity $\triangle PBC \sim \triangle PDA$

$\Rightarrow \frac{|PB|}{|PD|} = \frac{|PC|}{|PA|}$ (cross multiply)

$|PA| \cdot |PB| = |PC| \cdot |PD|$ //