

## Extra Credit - Coordinate Geometry Assignment IM2

There are numerous geometric theorems that involve circles and lines. Several "lines" that are associated with circles are secant lines, tangent lines and chords.

In this assignment, you will work with chords in a circle and you will be required to do the following items:

- (1) Define and prepare illustrations on *GEOGEBRA* the following "lines":
  - a. Secant lines
  - b. Tangent lines
  - c. Chords

One Circle-Chord theorem states that "congruent chords in the same circle are equidistant from the center". This is the theorem that you will be demonstrating & trying to prove using coordinate geometry

- (2) Find a source on-line that illustrates this theorem. Explain this theorem in plain terms, including a diagram from your on-line source.
- (3) Create an illustration on *GEOGEBRA* that demonstrates this theorem. Ideally, in your *GEOGEBRA* illustration, I should be able to move lines, segments & points around without changing the basic concept of the theorem
- (4) Next, present a proof using analytical geometry (algebra - slopes, lengths, midpoints, etc)

Analytical Geometry (or using coordinate geometry) is only ONE way to prepare proofs of geometric properties. There are many geometric ways to prove properties of geometric figures, and in this particular problem, you can make use of Congruent Triangle postulates.

- (5) EXTENSION → Find on-line (or write one yourself) a proof of this property of chords in circles and be prepared to discuss/explain this proof with me.