CO 480 Week 6 Learning Goals

By the end of this week, students should be able to...

- Discuss the history of the cubic equation. That is, identify key figures who worked towards finding the roots of a general cubic equation. (for example, Scipione dal Ferro, Antonio Maria del Fiore, Niccolò Fontana (Tartaglia), Girolamo Cardano, Lodovici Ferrari)
- Identify who solved the cubic equation first. Identify different cases that were solved at different times by different people.
- Discuss some of the history of Brescia, where Tartaglia grew up.
- Translate Tartaglia and relate this to the previous bullet point as well as to why he wore a beard.
- Discuss the dispute between Tartaglia and Cardano. Identify why Tartaglia was upset at Cardano. Debate whether this anger was justified from the point of view of Tartaglia and from the point of view of Cardano
- Describe the contents of Ars Magna
- Discuss some of the life and times of Cardano. Identify some of his misfortunes (according to Cardano). These could include his marriage, the death of one of his sons, the gambling losses that both he and his other son experienced, the cheating issues Cardano faced, etc.
- Identify the two key tricks in solving the cubic equation of the form $x^3 + px = q$ with $p, q > 0$.
- Be able to use Cardano's Formula to solve a problem. (You needn't memorize it though deriving parts of the formula or using some of the tricks in the previous step might be asked).
- Be able to convert from a cubic of the form $x^3 + ax^2 + bx + c$ to one of the form $x^3 + px + q$.
- Convert answers from Cardano's Formula to a more human readable form. For example, convert $\sqrt[3]{10 + \sqrt{108}} - \sqrt[3]{10 - \sqrt{108}}$ into the number 2.
- Discuss Bombelli's contributions to the solving of the cubic, including simplifying the algebra and giving explicit rules for complex numbers.