2020 Academic Super Bowl
Senior Math
Final Study Guide
The Roaring Twenties

I. Calculus - 24%
   A. Derivatives
      1. Definition/Basic Meaning
      2. Power and Chain Rules
      3. Product & Quotient Rules
      4. Trig Rules
   B. Applications (PVA (position/velocity/acceleration); max/min; slope; generic)

II. Algebra - 24%
   A. System of Equations (both linear and non-linear)
      1. Solutions of Equations
      2. Applications
   B. Equations of Lines

III. Geometry - 24%
   A. Vectors (both two and three-dimensional)
      1. Addition, Subtraction, Scalar Multiplication, Magnitude
      2. Rectangular and Polar Forms
      3. Dot Product and Cross Product
      4. Applications
      5. Lines and Planes defined by vectors

IV. Logarithms and Logarithmic Equations - 16%
   A. Definition and Properties of Common Logarithms
   B. Solving Equations Involving Logarithms
   C. Change of Base

V. Quaternions - 12%
   A. Definition and Properties of Quaternions
   B. Addition, Subtraction, Multiplication and Division
   C. Conjugate, Inverse, and Norm
   D. Very basic knowledge of origin and uses of quaternions

2020 Outlines were developed by coaches who chose to share ideas at the 2018 Academic Coaches Conference, and through email, and further developed by question writers.

Only the TI-30XA and TI-30XIIIS may be used during competitions.