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### **Guidance to Course Topics**

It can sometimes be difficult to find a summer course that aligns perfectly with the content included in an IMSA core course. It may be necessary to consider two summer courses to adequately attain the necessary content. The general topics that need to be addressed for each course are briefly outlined below; depth of coverage in each area is also a consideration. With this, and due to the brevity of summer experiences, it is likely that we will provide supplementary material to be completed alongside the summer course to help ensure that the student will continue to meet (or exceed!) IMSA mathematics core course expectations.

#### **MI-2**

- Matrices
- Linear Functions and Linear Regression
- Introduction to Functions
- Transformations of Functions
- Inverse, Odd & Even Functions
- Exponential Functions

#### **MI-3**

- Logarithmic Functions
- Polynomial Functions
- Rational Functions
- Trigonometric Functions

#### **MI-4**

- Sequences & Series
- Advanced Trigonometry, Applications and Identities
- Vectors
- Polar Coordinates and Functions
- Complex Numbers

**Calculus courses** have a much more consistent curriculum from institution to institution.

AB1 & BC1 (often a Calculus 1 course will suffice)

- Limits
- Rates of Change
- Euler's Method
- Differential Calculus and its Applications

AB2 & BC2 (may require both a Calculus 1 and a Calculus 2 course)

- Parametric Equations
- Approximations and Reimann Sums
- Integral Calculus and its Applications

BC3 (often a Calculus 2 course will suffice)

- Additional integration material
- Sequences and Series
- Differential equations
- Vectors
- Polar graphs