### What should a Mathematics major know, be able to do, and/or have achieved when s/he graduates?

<table>
<thead>
<tr>
<th>Category</th>
<th>Specific Goals</th>
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| Develop Mathematical Maturity | Feel comfortable finding sources  
Take initiative to find out things on own  
Intellectual independence  
Read proofs critically (question, understand, verify)  
*Don’t take anyone’s word for it*  
Move from concrete to abstract thinking and back with facility  
*Understand something well enough to create own examples*  
Analyze: what is given? what is known? what is unknown?  
Understand the value of a community of learners  
*Value and take advantage of group study as a tool*  
*Participate in (and create) a math community (people and ideas)*  
*Develop an advisor/advisee relationship*  
*Connect with past, present, future peers*  
*Engage each other mathematically*  
Recognize patterns and connections between other subjects and mathematics  
Recognize patterns and connections between areas within mathematics  
Synthesize ideas across math courses  
Read and understand symbolic language  
Develop symbiotic facility with symbolic and verbal/written language |
| Logical Thinking          | Demonstrate the process, not just the answer (thinking)  
Provide evidence to support arguments  
Organize and construct a logical argument  
Develop problem solving “skills” |
| Communicate Effectively in All Forms (written, oral, etc.) | Clear, precise, thorough  
Understand and write for an audience  
Articulate arguments clearly and succinctly  
Speak about math before a variety of audiences (students, faculty, professionals) in a way they can understand  
Writing  
*Develop a voice*  
*Write works that are interesting to read*  
*Eliminate assumptions (writing should stand alone)*  
*Use appropriate mechanics* |
| Intellectual Development   | Develop self-critical skills (know what you don’t know and how to address it)  
Risk failure for the opportunity to succeed  
Know how to access knowledge (learn how to learn)  
Develop mathematical and intellectual confidence |
| The Basics                 | Exposure to a wide variety of concepts  
Enjoy mathematics  
Preparation for a variety of challenging careers  
Computational ability (with use of software such as MATLAB)  
Math typesetting software (such as LaTeX) |