1035-R1-1808   **Jialing Dai*** (`jdai@pacific.edu`), 3601 Pacific Ave, Mathematics Department, The University of the Pacific, Stockton, CA 95211. *Examples of Inductive Reasoning and Recursive Thinking in Undergraduate Mathematics.* Preliminary report.

One of the most important things students try to learn in college math courses is logical reasoning and critical thinking. Those skills are the training that will benefit students for life. Pattern identifying and inductive reasoning are the ones we see frequently in most undergraduate math courses. In the talk I will share some ideas used in an upper division general education course I taught in China. The course was example-based and focused on mathematical reasoning and critical thinking. One of the aspects of the course was to develop students' ability to recognize patterns, see connections and relations among seemingly different problems, make and modify conjectures, and prove their conjectures. For instance, to find the probability distribution of the number of trials X required to observe two successes on consecutive trials, students (1) consider a few simple cases; (2) abstract a pattern and make a conjecture; (3) prove the conjecture; (4) find the probability mass function of X. Students often have to modify their conjectures a few times before they can actually prove them. In this process, students explore and discover mathematics, and improve their skills of pattern recognizing, abstracting,generalizing,logical reasoning, and critical thinking. (Received September 20, 2007)